

# OSCAR'S WILD RIDE



**Note: Oscar uses 850 count gum balls.**

**QLT Merchandising, Inc  
10/01/98 Version**



## OSCAR'S WILD RIDE

### Operator's Manual

Welcome to the QLT family of Kinetic Vending Machine owners. You now own the new *interactive* version of **Oscar's Wild Ride**, one of the most advanced and modern vending systems available. You also have purchased our QLT commitment to help you achieve the best possible return on your investment. We hope that you find this Operator's Manual evidence of our commitment and support. Read each topic thoroughly, follow the procedural steps and you will have no problem in quickly placing your unit in service.

**Special Note: Oscar uses 850 count gumballs.** The acrylic ball used in the action sequence is almost exactly the same size as an 850 gumball. Although there is no way that an acrylic ball could *normally* get into the gumball hopper, if you should accidentally drop an acrylic ball in with the gumballs, you must find it and **get it out**. It *will* vend just like a normal gumball. A person could mistake the acrylic ball for a gumball and put it in his/her mouth and you could find yourself liable. **Always keep acrylic balls away from gumballs!**

## A Word From Oscar

Hi! My name is Oscar! I am a robot with a personality. I can think! I can talk! I've got a computer brain, electronic sensors, sound chips, and an assortment of other electronic gizmos, lights, and fuses --- lots of high tech stuff! And now I have added a patented acrylic ball process that makes me *more reliable* than my competitors.

I'm proud of my family heritage. I am a **state-of-the-art** kinetic (moving, flashing, talking) vending machine. I'm smarter than other vending machines. I don't just sit there! I seek curious customers-- you know, the kind with quarters. I talk to them and become their friend. I offer them a chance to win an extra gumball. After customers discover what I can do, they continue to come back to visit. I enjoy it when they have fun!

I'm glad I belong to you! I hope you will take care of me. Sometimes I need my window cleaned, a light bulb changed, or other TLC. If you will do these for me, I will be one happy robot. Fill me with gumballs! Bring on the quarters! Yahoo! We're off and rolling!

Affectionately yours,

*Oscar*



## Contents

A Word from Oscar .....	i
Unpacking .....	1
Preparation for Operation .....	1
Bucket Contents .....	2
Selecting Hoop Size .....	3
Initial Startup .....	4
Vending Mode Sequence .....	6
Functions of Operating Mode switches .....	8
Transport to location .....	10
Setting up on Location .....	10
Routine Operating and Periodic Maintenance .....	11
Keeping Oscar Clean .....	12
Cleaning Guidelines .....	13
If Something Malfunctions .....	14
Trouble Shooting Charts) .....	15-21
Specific Procedures (see pp. 15-21 for references) .....	23-48
<i>Appendix 1 - Adjust Mode</i> .....	52
<i>Appendix 2 - Suggested Tools</i> .....	56
<i>Appendix 3 - Replacement Parts</i> .....	57
Warranty statement .....	59

## Figures

	Page
Figure 1. Oscar's Cabinet .....	2
Figure 2. Main Power Switch .....	4
Figure 3. Playfield Area .....	6
Figure 4. Heckle Mode .....	8
Figure 5. Adjust/Normal Mode .....	8
Figure 6. Continuous Vend/Don't Dispense .....	8
Figure 7. Circuit Board Layout .....	22
Figure 8. Fuse .....	23
Figure 9. "R" Elevator Full Down Position .....	24
Figure 10. Coin Mechanism Covers .....	25
Figure 11. Coin Mechanism .....	26
Figure 12. "A" Dispenser and Optical Block .....	28
Figure 13. "B" Dispenser .....	30
Figure 14. Top View of Dispenser .....	33
Figure 15. Replacing Cap Correctly .....	33
Figure 16. Staircases .....	35
Figure 17. Whirly and Switch .....	36
Figure 18. Whirly Spring and Coupler .....	37
Figure 19. Whirly Dump Adjustment .....	38
Figure 20. Elevator and Dump Rod .....	40
Figure 21. Wire as a Threader .....	40
Figure 22. Pulley Position with Elevator Full Down .....	41
Figure 23. Correct Elevator Full Down Position .....	41
Figure 24. Switch and magnet .....	42
Figure 25. Lower Ball Guide .....	46
Figure 26. Drop Rod .....	47
Figure 27. Drop Button Switch Assembly .....	48
Figure 28. Switch Wiring .....	50
Figure 29. Hoop Switch Detail .....	51
Figure 30. Adjust/Normal Switch .....	52

# Unpacking

## Receiving Inspection

Your new "Oscar" machine came to you wrapped with clear plastic wrap. Now that you have unpacked Oscar, you should inspect for any visible or hidden damage. You should have inspected the packaging for crushed corners, tears in the plastic wrap, fork-lift puncture marks, or other signs that physical damage may have occurred during shipping. You should note abrasions and scratch marks on the cabinet, broken parts, large gaps in the cabinet, or other signs of shipping damage.

**If you find hidden damage, call the freight company immediately and initiate a damage claim.**

Take pictures of the damage, if you can. Send a FAX or letter to the freight company describing the damage. When you talk to the freight company on the phone, ask them to enter the hidden damage you have found on the original Bill of Lading or on a supplementary report. Get the name of the freight company employee who is recording your damage complaint or handling your damage claim.

**Note:** *If you find that Oscar was damaged during shipment, your initial inspection comments on the Bill of Lading are required to establish a shipping damage claim.*

## Preparation For Operation

### Preparing the cabinet for operation

When you have finished unwrapping your new vending machine and completed a hidden damage inspection, follow these steps to prepare Oscar for operation:

1. When you removed the brown envelope taped to the cabinet window, you found this Operator's Manual and two sets of keys. The flat keys fit the bottom door and window locks. The round keys fit the locks on Oscar's cap. (**Note: The installed door and window locks are shipping locks (good quality, but common keys). You may want to re-equip Oscar with a distinctive lock of your choice to ensure you have the only key in your area.** Specification is a 3/4" diameter, 7/8" long, cam lock.)

2. **Your Warranty** is on the last page of this Operator's Manual. Record the date that you received your Oscar on your Warranty. We stand behind our product. If you have any problems, please call QLT Merchandising, Inc. 1-888-483-1827, and we will be delighted to help you and answer your questions. Please have your Oscar serial number, date of shipment or purchase and your Operator's Manual readily available.



3. Remove the front window by unlocking the latch and lifting out the window. **Note:** the window has a very tight fit to prevent someone from using a screwdriver to pry open the front window and break the lock. *If the window does not readily open by pulling out on the key, try placing one hand on the bottom of the globe and gently pushing up while simultaneously turning the key and pulling out on the window lock.*

4. Remove the brown protective paper from the window by peeling up from a corner. Install the window and remove any residue or finger marks with a soft cloth and the spray glass cleaner. Set the window aside in a place where it will be protected from falling or other hazards.

5. Open the bottom door with one of the keys. When you open the door, you will see the controller board (Oscar's brain), and a bucket which has several items in it.

6. You will still need to install light bulbs and acrylic balls to get Oscar started. Remove the coin bucket by tipping the bucket slightly to pull it from under the coin chute.

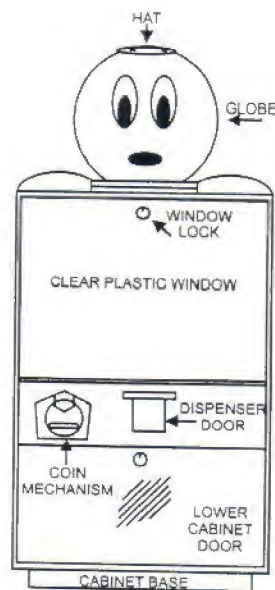


Fig 1. Oscar's Cabinet

## Bucket Contents

a. **Five MR11 Narrow Flood halogen lamps.** Install four of these lamps in the sockets in the left and right walls, and in the ceiling of the "play field area" of your machine (The fifth lamp is a *spare*.). **CAUTION!!** The center *bulb* portion of the lamp is sensitive to body oils. *Avoid* touching it with your fingers as you press the lamps into their sockets. Body oils will reduce bulb life.

b. **Nine acrylic balls.** These balls are one of the secrets of Oscar's reliability. Place all of them in Oscar's "A" Dispenser. This dispenser is hanging from the rear center of the ceiling of the "play field area" of your machine. You may insert the balls in one of two ways: (a) Reach into the dispenser from the right side until you feel the brass baffle. Squeeze the baffle and carefully pull it out. Place the balls as far to the left as possible. You will be able to feel the dispenser holes in the "rocket assembly" inside the dispenser. (The rocket assembly fits inside the red metal housing and consists of a dispenser wheel, a cap to cover it, and a shaft to drive it.) Now, replace the baffle. The baffle serves to prevent balls from wandering into the right side of the dispenser where they will not fall into the holes in the dispenser wheel. (b) The other way to insert the acrylic balls is to carefully reach up on the left side of the "A" Dispenser and push the balls through the small door in the blue panel on that side. This is the opening where balls are delivered



back to the dispenser by the rear (Return) elevator. **Note:** The acrylic balls closely resemble real gum balls. They will remain bright and shiny for thousands of vends. If they begin to take on a slightly dull appearance, hold them a few at a time in your hand and spray a little Silicone on them. Now rub it around to cover them well and put them back in the "A" Dispenser. The excess Silicone will lubricate the plastic parts of the dispenser (the rocket assembly) as well as rejuvenating the acrylic balls. **Hint:** if the dispenser seems to be sticking a little after use, use the same technique to help lubricate the dispenser. Spraying Silicone directly into the dispenser is **not** recommended.

c. **Two Allen wrenches.** The smaller of these two Allen wrenches (2mm) fits the "shaft couplers" which "couple" motors to shafts in both dispensers, on the crank assembly, and on the Whirly (merry go round). The larger of the two Allen wrenches (3/32") fits the large pulleys on the elevator motors, and the shaft collars located on the crank (one on each side of the bucket) and the shaft collars at the top of the elevator shafts. **Note:** The set screws on these various parts have been "locked" with a liquid type "thread lock". This thread lock is non-permanent and does not act like a weld. That is, with sufficient force, you will be able to move the screws and after you finish, they will remain "locked" in place.

d. **Fuses.** Oscar uses two types of fuses, 2 amp and 250 milliamp. One spare fuse of each value is included in your bucket. Fuse locations are shown on the layout sticker. Should a fuse blow (usually a rarity), you may have to use needle nose pliers or a similar tool to pull the blown fuse. Fuses are not hard to pull, but the spacing is so close that many people can't get their fingers down in far enough to get a grip on the fuses. Spare fuses may be purchased from an electronics store. We recommend you take a fuse in with you as an example.

e. **Connector with pigtail.** A special tool is needed to connect the connectors to wiring. Therefore, we have included this pigtail so that if you ever have to replace a connector for any reason, you can simply splice into the wire with the pigtail rather than buying both a connector and the tool to attach it to your new wiring.

f. **One "Quarters Only" decal** for use in the USA.

g. **One spare elevator string and three spare 6-32 acorn nuts.**

## Initial Startup

Now that you have explored the contents of your coin bucket, you will probably want to put Oscar through his paces before taking him to your vending location. This is an excellent plan. The more familiar you are with Oscar's operation, the easier it will be to recognize the source of anything that may get a little out of adjustment. Let's look inside the controller area.

1. Locate the power cord, unwind it, and push it down through the hole that is right in front of the controller board. Push as much cord as possible through this hole and let it coil up underneath. From the rear, you may now tip Oscar forward *slightly*, pull the cord out, and make sure it comes underneath the pedestal at the center of the rear where there is a small cutout especially made for the cord. Pull enough cord to reach the power outlet. Leave the rest underneath the machine.

2. Look at your control board (we call it the controller). Make sure all wire connectors are firmly plugged in.

3. Notice that there is a pictorial diagram of the controller located on the inside of the front door. This will help you understand the layout of the controller. Figure 2 is the same diagram. Wires for switches and sensor inputs are attached to the right hand side. Wires for lights and the coin counter are attached across the back. Motors are attached down the left side of the controller board or about down the middle of the controller itself. All wiring is color coded. If you should have to detach several wires for any reason, the color code on the wires matches the color code on the layout diagram. The diagram is your guide to reattaching wires correctly.

4. Oscar's vending wheel is interchangeable with other vending wheels should you decide to convert the machine to dispense bulk candy or capsules. If you decide to convert to one of these options, contact the factory for parts and instructions.

5. The **Main Power Switch** is a rocker switch located on the front or in front of the power supply which is located at the left front side of the controller board. Turning on the Main Power Switch will "boot up" the controller and Oscar will be ready to go. When Oscar is turned on, there is a 30 second initialization sequence ("wake up") before Oscar is ready.

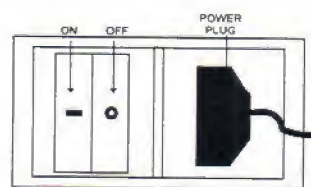


Fig 2. Main Power Switch

6. Look at switch and knob settings on the controller. Here are some hints for using your controller board to the best advantage.

a. **Volume Control Knobs.** These knobs are located near the front right hand corner of the board. They are about 1/2" in diameter with a black line extending from the center of each knob to the edge. They are very sensitive (a *small* adjustment makes a *big* difference in



volume). The **Left Volume Control Knob** controls the volume of the voice and sound effects. The **Right Volume Control Knob** controls the volume of the “tease” mode. This feature allows you to adjust volume and balance to suit the location of your machine. You may easily start the sequence by feeding a quarter through the coin mechanism and then adjusting the volume to the desired level for each effect.

b. **Operating Mode Selection Switches.** These rocker switches are located on a small rectangular plastic block near the rear right corner. The switches are preset at the factory with “normal” sound *on* and the “heckle” sound *off*. The switches are very small so be careful when you change any of them that you are only activating the one(s) you really want. (See p. 22, fig 7 for location and functions.) **IMPORTANT NOTE:** Oscar’s brain reads *and memorizes* the position of these switches during “boot up” (when the main power switch is turned on). From then on, *Oscar uses the memorized switch positions* as a reference for operations. If you change the position of an operating Mode Switch with the main power switch on, Oscar will not recognize the change. When you change positions of the Operating Mode Switches, it is important to turn the main power switch off, reset Operating Mode Switch(es) desired, and turn the main power switch back on. Oscar will now memorize and use the new switch positions as the reference for what you are doing. *Note: For more information about the options available, see Functions of Operating Mode Switches at the end of this section.*

## Vending Mode Sequence

Now that you have everything ready to go, try Oscar's vending mode to become familiar with the sequence. The following description will help you learn the component parts involved and the sequence of events.

1. Turn Oscar on by turning on the main power switch on the controller. Oscar will "wake up" by turning the Whirly (Carousel), running the C Elevator, running the Crank (or Tram), running the "R" Elevator, and ending with all components in their "ready" positions.

2. Test Oscar's operation with at least ten (10) quarters while you familiarize yourself with how the sequence operates. The sequence of events in one vending cycle is explained below:

- a. A quarter is inserted and the Coin Mechanism is turned clockwise one full turn.
- b. An acrylic ball drops from the "A" Dispenser onto the Upper Staircase.
- c. The ball rolls down the Upper and Lower Staircases, rolls down the Rail, and drops onto the Whirly (Carousel).
- d. The Whirly turns until the ball hits the dump rod and dumps the ball into the Table.
- e. The ball rolls down the Table into the C (coaster) Elevator.
- f. The C Elevator raises the ball and drops it onto the Coaster Track.
- g. The ball rolls down the Coaster Track into the Crank (Tram) Bucket.
- h. The Crank (Tram) Bucket rotates up and dumps the ball into the Drop Block. Simultaneously, the Drop Button lights up and the Hoop begins to swing back and forth.
- i. When the Drop Button is activated or after 15 seconds have past, the ball drops onto the Trampoline and bounces toward the Hoop.
- j. If the ball bounces through the Hoop before the 15 second time limit is

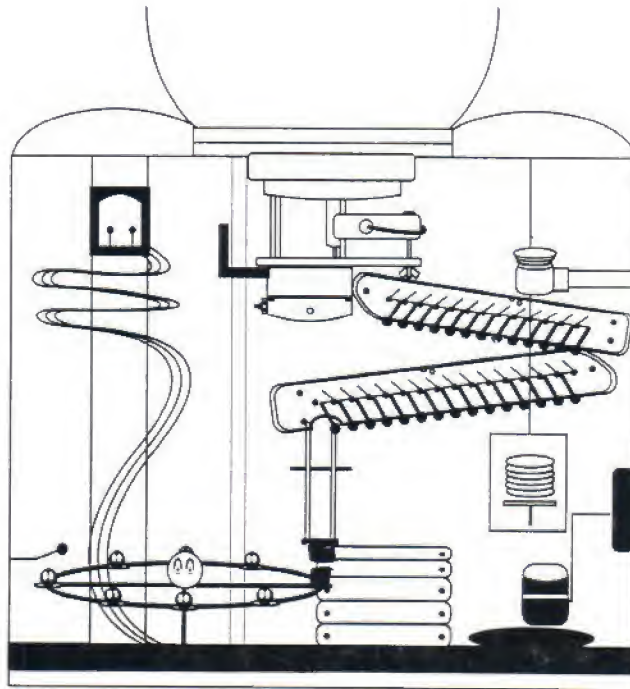


Fig 3. Playfield Area



reached, you will hear a "winner comment" on the sound track and one of the two gumballs will dispense from the "B" Dispenser.

k. The ball then rolls into the Trough and into the "R" (Return) Elevator.

l. The "R" Elevator carries the ball up and dumps it into the "A" Dispenser for reuse. A gumball will dispense (this will be the second gumball if a basket was scored) before the "R" Elevator reaches the bottom position.

Vending sequence steps a-l constitute one vending cycle. After completing any vending cycle, Oscar returns to the Heckle Mode (if selected) to attract the next quarter.

To test the "Heckle" Mode, turn off the Main Power Switch. Select this mode by rocking the furthest back Mode Selection Switch (see following page) down to the left, and turn the Main Power Switch back on. Oscar will go through a "wake up" cycle. After a few seconds, you will hear the first "Heckle." A number of "one liners" will continue at approximately 30-40 second intervals

In the event that Oscar does not operate correctly during the vending cycle, refer to the *If Something Malfunctions* section beginning on page 14.

When you have verified that Oscar's Heckle Mode and Vending Mode cycles are operating correctly, check the counter in the lower cabinet to assure that it is counting. Activation of the counter will take place when an acrylic ball drops from the "A" Dispenser through the Sensor Block at the beginning of the sequence. The counter will record each vending cycle. You can use the counter to verify that you are receiving the correct number of quarters. The readout count cannot be reset to zero. The readout will advance one digit each time an acrylic ball passes through the Sensor Block. The counter on your machine will already show a number of cycles confirming factory testing.

At this point, in preparing Oscar for operation, you should have done these things:

- cleaned the machine.
- located all spare parts.
- become familiar with Oscar's vending cycle.
- verified that Oscar's heckle and vending mode are operating correctly.
- verified that the counter is working correctly.

You are now ready to transport Oscar to your vending site. **Note:** If you want to familiarize yourself with the Operating Mode Switches, you may want to do so *before* you install Oscar in an operating location. If so, see Fig 7 on p. 22 for general location and read the following section.

## Functions of Operating Mode Switches

Let's begin with the switch closest to the back of the group as it is the one you will probably want to experiment with first when placing your Oscar at its location. **Caution!! Always turn the power off before reaching into the controller area.** Since Oscar reads and memorizes switch settings of the Operating Mode Switches during "boot up" (right after the Main Power Switch is turned on), it is necessary to turn the Main Power Switch off before resetting Operating Mode Switches. Otherwise, Oscar will not recognize the new switch settings.

1. The **Audio Attract (or "Heckle") Mode** is the *very back switch*. **IMPORTANT!** *This mode can be your friend or your foe!* This switch can be set for **Heckle** or **Don't**. The factory setting is for **Don't** to benefit owners who may place Oscar in service before they have read all operating instructions in the Operator's Manual. The **Heckle** mode is *great* if Oscar is out in the center of a mall. It *will* get attention. However, we don't recommend using it if Oscar is near a checkout counter or close to employees who have to listen to it constantly. The different Heckles which randomly play can quickly become very irritating to people who are subjected to them constantly. Your choice! To select **Heckle**, turn the Main Power Switch off, reset the **Heckle/Don't** Switch by rocking it down to the left, and turning the Main Power Switch back on. In less than a minute, you will hear the first Heckle. A variety of heckles will play at 30-40 second intervals until you re-select the "Don't" Mode.

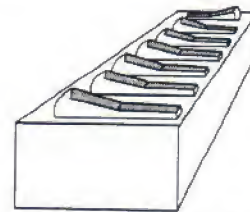


Fig 4. Heckle Mode

2. The second, third and fourth switches from the back are not presently used, but are available for future Oscar upgrades.

3. The **Adjust/Normal Mode** is the fifth switch from the back. This switch is set in the Normal Mode at the factory. If you need to adjust individual modules, you may do so by selecting this feature. *See p. 50 for a complete explanation of each feature of the Adjust Mode.*



Fig 5. Adjust/Normal Mode

4. This leaves the front two switches. The first and second switches *from the front* are the **Continuous Vend/Normal** Switch and the **Don't Dispense/Dispense** Switch. Oscar is shipped with the **Normal** and **Dispense** Modes selected. If you want to run the machine for a while so that you can observe its operation without repeatedly inserting quarters, turn off the Main Power Switch, select **Continuous Vend** and **Don't Dispense** on the two front switches and turn the Main Power Switch back on. With these two modes selected, the machine will repeatedly go through the vending sequence without the necessity of using

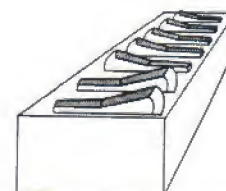


Fig 6. Continuous Vend/Don't Dispense



quarters and the Coin Mechanism to start each sequence. Selecting **Don't Dispense** on the second switch back prevents the "B" Dispenser from rotating and dispensing a gumball at the end of every cycle.

To return to the **Normal/Vend** Mode, turn the Main Power Switch off, return the **Continuous Vend/Normal** Switch to the **Normal** Mode, return the **Don't Dispense/Dispense** Switch to the **Dispense** Mode, and turn the Main Power Switch back on. Oscar is now ready for normal use.

## Operating Instructions

### Transport to Location

You will probably transport Oscar over the road by truck or trailer. We recommend that you keep Oscar upright during transport. Obtain a sturdy hand truck and plenty of cushioning blankets. If you use a hand truck, we recommend carting Oscar from the back or side. Strap Oscar to the hand truck when you move him. Be sure to protect the cabinet from the hand truck or strap with cardboard or blankets.

We recommend that you fill the globe on location, however, you can transport Oscar for short distances with a product in the globe. We recommend that you don't carry Oscar with a globe over 1/2 to 3/4 full.

If you must transport Oscar with a full globe, carefully consider that:

a. The up and down jostling of gumballs on the road, combined with the pressure of a full globe, tends to deform some of the gumballs from "round" into "square" or "cylinder" shapes. Such deformed gumballs may hang up in the dispenser wheel of your product dispenser and cause it to clog.

b. If you have a full or partially full globe exposed to high heat or direct sunlight during transit, the gumballs become noticeably softer and deform more quickly.

Be aware that deformed gumballs can create more problems than you want to deal with. Our advice is, therefore, to transport Oscar with care and load your gumballs on location.

### Setting Up On Location

Follow these steps to placing Oscar in operation on your vending location.

1. Place Oscar close to his final position, leaving space to plug in the power cord.
2. Plug in the power cord and slide Oscar into final position.
3. Test Oscar's operation with five quarters. Throw in a few gumballs or use what is already in the globe. Make sure the delivery mechanism (the "B" Dispenser) is free and operating properly. If Oscar does not operate properly, consult the *If Something Malfunctions* section beginning on p. 14.
4. Set "Voice" and "Background" volume in relation to the surrounding noise.



5. Record the counter reading in the lower cabinet. (This will give you a starting number for comparison with the counter reading on your next visit.)
6. Unlock the hat and fill the globe 1/2 to 3/4 full with *sorted* gumballs. Re-lock hat.
7. Do a final clean and wipe down.
8. Place a "If this machine needs service...." card on the machine somewhere. This should be a nice looking card. People who come by, may have a suggested location for one of your machines. Make it easy for them to contact you.
9. Check in with the Manager or the Store Manager and tell them you have placed Oscar in operation. Give the Manager your card with a service number on it. Work at establishing yourself as a conscientious business person with a service-minded attitude.

### **Routine Operating Maintenance**

As soon as you have a vending unit on location, decide on a schedule for periodic visits. During these visits, you will want to accomplish several things:

- a. Collect the coin bucket and record the counter number. Check the circuit board and lower cabinet to ensure that no quarters have gone astray that could cause an electrical short.
- b. Re-fill the globe.
- c. Clean and wipe down unit.
- d. Check in with the Store Manager, or Owner and settle your rent or commissions as appropriate.

When you have a malfunction you can't correct, call QLT Merchandising, Inc. 1-888-483-1827, the manufacturer of Oscar. One of their Service Coordinators can help you diagnose the problem and advise how to restore Oscar to normal operating condition.

### **Periodic Maintenance**

The considerations below outline minimum periodic maintenance in addition to the Operations Maintenance already discussed. **You should also check with the city and state where Oscar is located to see if there are any local health rules that may apply.**

- a. Always wipe down the cabinet and clean the window when you visit Oscar. Use a soft cloth and a cleaner made for plastic. Do not use abrasive cleaners. They will scratch the plastic window and globe.
- b. Remove any gumball residue from the cabinet floor.

- c. Wipe the four elevator rods clean at least monthly.
- d. Use a 2" wide, clean paint brush to keep the cabinet inside clean.
- e. Check to see that all lights are working.

## **Keeping Oscar Clean**

### **Federal and Local Regulations**

The Food Protection Branch of the Food and Drug Administration has exempted gumball machines from regulations related to vending machines. According to the National Automatic Merchandising Association (NAMA), "The bulk candy used in gumball machines is not potentially hazardous Food... however, basic good Food handling practices should be applied to prevent contamination of the gumballs while in storage, in transit and while loading into a machine."

Some local entities have health standards which are much more stringent than Federal guidelines. The standards required by Maricopa County, AZ, are among the toughest we have found. Therefore, they provide good guidance for about anywhere else you may find yourself. These standards *require* that products being transported to service vending machines be "protected from the elements, dirt, dust and insects, rodents, and other contamination." Additionally, anyone servicing a vending machine... "shall wash their hands immediately prior to engaging in any vending machine servicing operation which may bring them into contact with foods...or with product contact surfaces of utensils, containers or equipment. While engaged in such servicing operations, [such persons] shall wear clean outer garments."

The regulations require that "all multi-use parts of vending machines which come into direct contact with any Food ... shall be thoroughly cleaned and sanitized ... as frequently as necessary to prevent Food contamination, and shall be kept clean."

*Keeping Oscar as clean as possible is good business sense* whether or not local regulations specifically require it. This means that you need to gauge how full you keep Oscar's globe based on the rate at which gumballs are being sold so that your product does not become stale. You should also schedule regular thorough cleaning of all parts which contact food. The frequency of this cleaning depends on the environment in which Oscar operates, i.e., ambient temperature, humidity, presence of dust, etc. The design of Oscar's globe encourages everything to feed downward and not to gather dust and debris. However, occasional cleaning of the inside of the globe with a product which is certified safe for Food contact surfaces, is advisable. The "*product dispenser*" area ("B" Dispenser) needs regular cleaning on a schedule determined by local regulations or by you as an owner/operator.



## Cleaning Guidelines

Three simple rules: (1) Follow the path of the gumball. Any surface which the gumball touches is a "food contact surface." (2) Use a disinfectant type spray which is approved for use around food, or a very mild solution of Clorox. (3) The cleaning schedule must be within the legal guidelines of your city, county, and/or state. If there are no required guidelines, consider the environment where your Oscar operates (heat/cold, presence of dust, humidity, etc.). Ensure your cleaning schedule and techniques are maintaining a high degree of health safety.

Beginning at the top of the machine:

1. The hopper. This area is enclosed and pretty well protected, however there is a lot of activity there. Cleaning the hopper takes some time and some practice. **Be sure** to clean regularly on a schedule *that will maintain proper sanitation*.
2. Vacuum the cabinet floor to remove loose debris, then carefully clean the entire floor.
3. Clean the inside of the product delivery tube and the Dispenser Door both inside and out. (You should be cleaning the outside of the door as part of normal "wipe down" during your routine servicing visits.)

## If Something Malfunctions

Due to Oscar's large size, it isn't practical to ship Oscar to the manufacturer. Therefore, help us to help *you* keep Oscar in service by following the fix-it advice on the pages that follow. In the rare event Oscar malfunctions, **use the "If Something Malfunctions" charts on the following pages to identify the possible cause of the problem and how to solve them.** Some procedures may look fairly long. **Do not** let this discourage you. Most procedures are relatively simple to perform, but very detailed instructions are provided to make sure you know what to do even when some steps would probably be obvious to you. *Oscar has been engineered to allow you to make most adjustments with your hands or with a minimum number of tools.*

One feature that helps greatly in assessing problems is the LED (Light Emitting Diode) array on the circuit board. You will notice that individual trouble shooting procedures will often ask you to look at a specific LED to aid in accessing a problem. The layout chart on the inside of the front door will help you locate individual LEDs. Fig 7 on pg. 22 in this manual is the same layout. Green LEDs are associated with switches or sensors, yellow LEDs are associated with lights, and red LEDs are associated with motors.

A second feature that may sometimes be used is the Adjust Mode. The Adjust Mode may be used to *continuously repeat a single portion of the vending cycle* so that you do not have to repeatedly run through the *entire* vending cycle to adjust just one item. Detailed instructions for using the Adjust Mode are found in Appendix 1.

In the event that more detailed instructions are required, the following charts will refer you to the corrective procedures listed below. If you need advice or can't fix the problem, call QLT Customer Service at 1-888-483-1827 for advice. One of our Service Coordinators can help you identify the probable cause and provide advice on how to resolve the problem.



## Problem Summary Charts & Procedures

*(Use these charts for troubleshooting. They are arranged by problem and solution and they follow the path of the acrylic ball through its cycle.)*

If Something Goes Wrong summary charts.....16-21

### Index

*(This is an index list, **do not** use this list for troubleshooting. See the Problems Summary Charts first. However, the index is a good reference for reviewing procedures you have used before.)*

Oscar's Circuit Board, Fuses, & LEDs .....	22
Procedure # 1- Fuses .....	23
Procedure # 2 - Analyzing Reasons for Dropped Balls .....	24
Procedure # 3 - Trouble Shooting the Coin Mechanism .....	25
Procedure # 4 - Emitter/Detector .....	28
Procedure # 5 - Jammed "A" Dispenser .....	29
Procedure # 6 - Adjusting/Replacing the "B" Dispenser Switch .....	30
Procedure # 7 - Clearing a Jammed "B" Dispenser .....	32
Procedure # 8 - Adjusting the "B" Dispenser Vending Wheel .....	33
Procedure # 9 - Adjusting Staircases .....	35
Procedure # 10 - Adjusting the Whirly (Carousel) .....	36
Procedure # 11 - Adjusting the Whirly Dump Rod .....	38
Procedure # 12 - Adjusting Table height .....	38
Procedure # 13 - Adjusting Elevator Dump Rods .....	40
Procedure # 14 - Replacing Elevator Strings .....	40
Procedure # 15 - Testing the "R" Elevator .....	42
Procedure # 16 - Aligning the Coaster Track .....	45
Procedure # 17 - Coaster Mounts .....	45
Procedure # 18 - Adjusting the Lower Ball Guide .....	46
Procedure # 19 - Aligning Crank Bucket Switches .....	46
Procedure # 20 - Adjusting the Drop Rod .....	47
Procedure # 21 - Adjusting the Trampoline .....	47
Procedure # 22 - Drop Button .....	48
Procedure # 23 - Replacing the Hoop Switch .....	51

## If Something Malfunctions

Problem Area	Likely Cause	How to Fix It
Oscar is totally <i>dead</i> . No lights on inside, no lights on circuit board. Green LED on the Power Supply is <i>not</i> on. (The power supply is the metal box located on the left side of the circuit board. The cover has lots of holes in it.)	<ol style="list-style-type: none"> <li>1. No power input.</li> <li>2. Main Power Switch in the lower cabinet is not on.</li> <li>3. Master Fuse behind the left side of the Main Power Switch is burned out.</li> </ol>	<ol style="list-style-type: none"> <li>1a. Check the outlet that Oscar is plugged into. Use a lamp, power tool, or other electrical device to check for power at the receptacle.</li> <li>2a. Verify that Oscar's Main Power Switch is on.</li> <li>3a. Replace with a 2 amp fuse. See p. 23, <i>Procedure #1 - Fuses</i>.</li> </ol>
Oscar appears <i>dead</i> . No lights on inside, no lights on circuit board. Green LED on the Power Supply is <i>on</i> . (The power supply is the metal box located on the left side of the circuit board. The cover has lots of holes in it.)	12 volt DC fuse to the right of the Main Power Switch is burned out.	Replace with a 2 amp fuse. See p. 23, <i>Procedure #1 - Fuses</i>
Acrylic balls are dropping from the Playfield into the lower cabinet.	One or more modules is out of adjustment.	See p. 24, <i>Procedure #2, Analyzing Reasons for Dropped Balls</i> .

Problem Area	Likely Cause	How to Fix It
Oscar has lights on but will not operate when quarter is inserted.	Coin mechanism switch is not working.	See p. 24, <i>Procedure #2 - Trouble Shooting the Coin Mechanism.</i>
Oscar's lights go on, but go off when a quarter is inserted and the coin mechanism activated.	<ol style="list-style-type: none"> <li>1. No gumballs in the globe and/or acrylic balls in the dispenser. Oscar goes into "shutdown" if there are no gumballs or acrylic balls to deliver.</li> <li>2. One of the modules is "hung up."</li> <li>3. One of the dispensers is jammed.</li> </ol>	<p>1a. Add gumballs.</p> <p>2a. Visually check to ensure that all module components are in their "home" position when the sequence begins. If a component is "stuck" out of position, see following charts to determine corrective actions.</p> <p>3a. See following charts to determine corrective actions.</p>
The "A" Dispenser drops multiple acrylic balls.	<ol style="list-style-type: none"> <li>1. Stray sunlight is striking the "detector."</li> <li>2. Optical Block has come loose.</li> <li>3. Emitter or Detector has failed.</li> </ol>	See p. 28, <i>Procedure #4 - Emitter/Detector Trouble Shooting.</i>



Problem Area	Likely Cause	How to Fix It
The "A" Dispenser does not drop balls.	1. Out of acrylic balls.	1a. Check controller area for dropped balls. If there are many dropped balls, see p. 24, <i>Procedure #2 - Assessing Reasons for dropped balls</i> .
	2. Dispenser jammed.	2a. See p. 29, <i>Procedure #5 - Jammed "A" Dispenser</i> .
The "B" Dispenser drops multiple gumballs.	Dispenser switch is out of adjustment or has failed.	See p. 30, <i>Procedure #6, Adjusting/Replacing the "B" Dispenser Switch</i> .
The "B" Dispenser does not drop gumballs	Dispenser is jammed.	See p. 32, <i>Procedure #7, Clearing a Jammed "B" Dispenser</i> .
One or more balls stopped on staircase.	Individual stair is not swinging freely.	See p. 35, <i>Procedure #9, Adjusting Staircases</i> .
One or more balls stopped at the bottom of the bottom staircase/top of the rail.	Staircase/Rail clearance is out of adjustment.	Lift front edge of the Lower Staircase. Retest by holding a ball at the top of the Rail and determine whether you can make it hang up under either side of the arc at the bottom of the Lower Staircase. If you can, push up the bottom of the Lower Staircase until there is just enough clearance that a ball cannot hang up when placed at the top of the Rail.
Ball does not land on the spring on the Whirly (Carousel).	Whirly not stopping in correct position.	See p. 36, <i>Procedure #10 - Adjusting the Whirly</i> .

Problem Area	Likely Cause	How to Fix It
Ball falls from Whirly (Carousel) when the Whirly starts in motion.	Spring at the bottom of the Rail is set too low.	See p. 36, <i>Procedure #10 - Adjusting the Whirly</i>
Ball "jumps" off the Whirly Spring rather than rolling smoothly onto the table.	Spring on Whirly needs adjusting.	See p. 38, <i>Procedure #11 - Adjusting the Whirly Dump Rod</i> .
Whirly drifts by switch and coasts to a stop.	Whirly Dump Rod out of adjustment. Spring on Whirly needs adjusting.	See p. 36, <i>Procedure #10 - Adjusting the Whirly</i> .
Ball hangs up at the bottom end of the table and does not go into the elevator.	7/16" nuts loose or shaft coupler loose.	See p. 38, <i>Procedure #12 - Adjusting Table Height</i> .
C (coaster) Elevator hangs up at the top of the Coaster Track.	Table out of adjustment.	See p. 40, <i>Procedure #13 - Adjusting Elevator Dump Rods</i> .
Ball hangs up on Coaster Track. Ball shoots off of Coaster Track.	C Elevator Dump Rod out of adjustment.	See p. 45, <i>Procedure #16 - Aligning the Coaster Track</i> .
Ball hangs up on the Coaster Track under the lower end of the gumball delivery tube.	Coaster Track out of adjustment.	1a. See p. 45, <i>Procedure #16 - Aligning the Coaster Track</i> . 2a. See p. 45, <i>Procedure #17 - Coaster Mounts</i> .
Ball hits the end of the Coaster Track and bounces back up the track. Bucket leaves before ball gets back.	1. Coaster clips out of adjustment. 2. Coaster track spine has popped out of coaster mount.	See p. 46, <i>Procedure #18 - Adjusting the Lower Ball Guide</i> .
Ball falls off end of Coaster Track without going into the bucket.	Lower ball guide out of adjustment.  Lower bucket switch out of alignment.	See p. 46, <i>Procedure #19 - Aligning Crank (Tram) Bucket switches</i> .



Problem Area	Likely Cause	How to Fix It
Ball falls through Drop Block.	Drop Rod out of alignment.	See p. 47, <i>Procedure #20 - Adjusting the Drop Rod</i> .
Ball trajectory is not correct for making a basket.	Trampoline is out of adjustment.	See p. 47, <i>Procedure #21 - Adjusting the Trampoline</i> .
Bucket (Tram) Crank Arm moves when Drop Button is depressed but does not cause ball to drop immediately.	1. Drop Rod out of alignment.	1a. Rotate the bucket crank arm around until the bucket is at the "dump" position. Bend Dump Rod slightly to the rear . See also p. 47, <i>Procedure #20 - Adjusting the Drop Rod</i> .
Bucket (Tram) Crank Arm does not move at all when Drop Button is depressed.	2. Drop Button switch has failed.	2a. See p. 48, <i>Procedure #22 - Drop Button</i> .
Drop Button does not light up.	1. Drop Button bulb burned out.	1a. See p. 48, <i>Procedure #22 - Drop Button</i> .
Basket is made but an extra gumball is <i>not</i> awarded.	2. Drop Button light switch has failed.	2. See p. 48, <i>Procedure #22 - Drop Button</i> .
"R" Elevator hangs up at the top.	Hoop switch has failed.	See p. 51, <i>Procedure #23, Replacing the Hoop Switch</i> .
	1. Dump rod out of adjustment.	1a. Bend Dump Rod slightly to the right, away from the elevator. See also p. 40, <i>Procedure #13, Adjusting Elevator Dump Rods</i> .
	2. An elevator switch has failed.	2a. See p. 42, <i>Procedure #15, Testing the "R" Elevator</i> .



Problem Area	Likely Cause	How to Fix It
Ball does not go into "R" Elevator from left trough.	1. Debris has gathered in trough. 2. "R" Elevator Down Switch out of adjustment.	1a. Clean trough with brush or vacuum.
Or Ball does not go into "R" Elevator from right trough.		2a. See p. 42, <i>Procedure #15, Testing the "R" Elevator</i> .
Ball comes down dispenser tube very late.	"B" Dispenser vending wheel out of adjustment.	See p. 33, <i>Procedure # 8, Adjusting the "B" Dispenser Vending Wheel</i> .
One or more halogen lights not working.		1a. Replace lamp
Motor is making a loud "growling" sound.	1. Lamp burned out.	2a. Replace 2 amp fuse for that light. See p. 22 layout for individual fuse locations and p. 23, <i>Procedure # 1 - Fuses</i> .
	Impending motor failure.	Call QLT Customer Service.





# FUSE SCHEDULE

Lamp 1	2A
Lamp 2	2A
Lamp 3	2A
Lamp 4	2A
Eye 1	2A
Eye 2	2A
Drop Lamp	2A
Future	2A
Future	2A
Future	2A
Future	2A
Backboard	250 MA
Future	250 MA
R Elevator Up	250 MA
R Elevator Down	250 MA
C Elevator Up	250 MA
C Elevator Down	250 MA
Crank Up	250 MA
Crank Down	250 MA
Future	250 MA
Whirly	250 MA
A Dispenser Forward	250 MA
A Dispenser Reverse	250 MA
B Dispenser	250 MA

## LAMP WIRING COLOR CODING

Lamp 1	Yellow
Lamp 2	Yellow
Lamp 3	Yellow
Lamp 4	Yellow
Eye 1	Yellow
Eye 2	Yellow
Drop Lamp	Yellow
Future	Yellow
Future	Yellow
Future	Yellow
Future	Yellow
Backboard	Yellow
Future	Yellow
R Elevator Up	Yellow
R Elevator Down	Yellow
C Elevator Up	Yellow
C Elevator Down	Yellow
Crank Up	Yellow
Crank Down	Yellow
Future	Yellow
Whirly	Yellow
A Dispenser Forward	Yellow
A Dispenser Reverse	Yellow
B Dispenser	Yellow

## OPERATING MODE SELECTION SWITCHES

Heckle	Don't	Audio Attract Mode
NA	NA	Not Used - Future
NA	NA	Not Used - Future
NA	NA	Not Used - Future
Adjust	Normal	Adjust Mode
Don't Dispense	Dispense	Don't Dispense (applies only in demo mode)
Continuous Vend	Normal	Demo Mode

This switch shown  
rocked down on right

This switch shown  
rocked down on left

## MOTOR WIRING COLOR CODING

To Backboard	Yellow
To R Elevator	Yellow
To C Elevator	Yellow
To Crank	Yellow
To Whirly	Yellow
To A Dispenser	Yellow
To B Dispenser	Yellow

Maximum Amperage Draw:  
less than 1 amp

## INPUT WIRING COLOR CODING

Future	Yellow
Future	Yellow
B Dispenser Switch	Yellow
A Emitter	Yellow
A Detector	Yellow
Future	Yellow
Future	Yellow
Basket	Yellow
Drop Button	Yellow
Crank Down	Yellow
Crank Up	Yellow
C Elevator Down	Yellow
C Elevator Up	Yellow
R Elevator Down	Yellow
R Elevator Up	Yellow
Whirly	Yellow
Coin Input	Yellow
To Speaker	Yellow

## OSCAR





## Procedures

*BE SURE you have used the preceding charts to first narrow down your problem. The charts will save considerable time by helping you choose the correct procedure to follow.*

### **Procedure #1 - Fuses.**

Fuse locations are shown on p. 22, Fig 7, Oscar Circuit Board Layout. Fuses protect power input to the Power Supply, power input from the transformer to the circuit board, each motor, light circuit, switch circuit and sensor circuit. They are easy to remove except that it is hard for many people to find enough space to get their fingers into position to pull the fuses out. For this reason, it is wise to have a pair of needle-nose or bent needle-nose pliers in your tool kit. (**CAUTION:** *Always* turn off the Main Power Switch before removing and/or replacing any fuse.) *In addition to the fuses shown on the blowup, there are two more fuses on the circuit board.* To find these fuses:

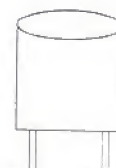


Fig 8. Fuse

1. Locate the Main Power (Master) Switch on p. 22, Fig 7.
2. Note that on the left, behind the Main Power Switch, is a fuse marked Master Fuse. If this fuse is burned out, there will be no power beyond the Main Power Switch so you will see no lighted green LED (Light Emitting Diode) on the front of the Power Supply (the box with all the holes in it to the left of the circuit board).
3. Note on the layout to the right of the Main Power Switch is a fuse marked DC Fuse. If this fuse is burned out, you *will see* a lighted green LED on the front of the power supply but none of the red, yellow, or green LEDs on the circuit board will be lighted.
4. If you are having problems with a particular module, light or motor, a burned out fuse could be the culprit. The procedures in the section that follows will often guide you to look at the LED (Light Emitting Diode) display to see if power is going to a module, light or motor. If LEDs are not lighting up at the right times, you will usually be guided to check the fuses as part of the analysis of the problem.

## Procedure #2 - Analyzing Reasons for Dropped Balls

A ball or two dropping into the controller area over a two week period is generally not anything to worry about. If, however, you find a number of dropped balls in a fairly short period of time, you probably need to make an adjustment or two. Most of the possible adjustments are quite simple once you know what to look for.

1. Check for debris in the left and right troughs. Gumball chips may build up over time and slow the acrylic balls down enough that they reach the R (Return) Elevator after the elevator has departed. The balls then roll into the bottom compartment before the elevator returns. Use a vacuum cleaner or a brush to clean out the bottom of each trough so that the acrylic balls roll freely to the elevator.
2. Check the Staircases. Run your finger down the bottom of each staircase to cause each individual stair to swing. If there is any hesitation or hangup by an individual stair, a ball may stop at that location and other balls will hang up behind it. When they break free as a group, they will eventually reach the "R" Elevator as a group. The elevator can haul two balls at a time. When the elevator goes up, other balls in the group will fall into the lower compartment. If any individual stair hangs up or hesitates, see p. 35, *Procedure #9 - Adjusting Staircases*.
3. Check the lower staircase where balls fall onto the rail. If it is possible to get a ball to hang up behind the arc at the lower end of the staircase, lift the staircase to bend its support rod slightly so that balls will just clear the edge of the arc and not hang up there.
4. Check the Coaster Track. If a ball hangs up on the Coaster Track, other balls may pile up behind it. As with the Staircases above, the results will be the same. Use your finger to impede a ball so that it comes slowly down the Coaster Track. If the ball hangs up at all, see p. 45, *Procedure #16 - Adjusting the Coaster Track*.
5. Check the position of the "R" Elevator when it is at the bottom. An acrylic ball should be able to enter the elevator from the left trough by rolling over the two upright posts and falling into the elevator. If the ball cannot pass over the two upright rods into the elevator, see p. 42, *Procedure #15 - Testing the "R" Elevator*.
6. Re-check the position of the "R" Elevator when it is at the bottom. Attempt to roll a ball off the elevator toward the right. If the elevator is adjusted correctly, the ball should bump into the right trough and not fall into the controller area. If the ball drops into the controller area, see p. 42, *Procedure #15 - Testing the "R" Elevator*.

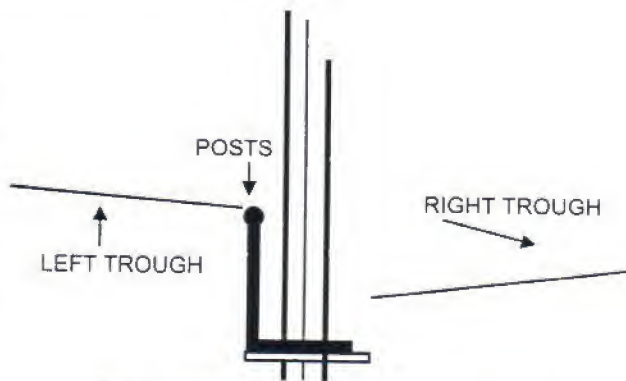


Fig 9 "R" Elevator Full Down Position



If you have looked at all these areas and you continue to find too many dropped balls, contact QLT Customer Service.

### Procedure #3 - Trouble Shooting the Coin Mechanism.

1. **Check** to make sure the coin input connector is firmly plugged into the circuit board. See p. 22, Fig 7 for location.

2. **Check** to make sure the wires are firmly connected to the Coin Mech Switch on the back of the Coin Mechanism. To do this, look down into the area behind the Coin Mechanism. You will see two wires attached to the left side of the switch. You can generally reach down in with a finger and push on them to make sure they are firmly attached. If you cannot reach, or if you can see a loose wire...

3. Remove *one* screw from the horizontal Coin Mechanism Cover, loosen the other screw slightly and rotate the cover out of your way. You may now reach down into the switch area to replace either of the wires.

4. If all are firmly connected, put a quarter in the Coin Mechanism and begin turning the handle while observing the green LED nearest the front on the right side of the circuit board labeled "Coin Input." When you are roughly 3/4 of the way through a full turn of the Coin Mechanism handle, the green LED will come on momentarily showing activation of the Coin Input Switch. If the light does not blink on and then off before you come to the end of the handle rotation, suspect a bad Coin Mechanism Switch.

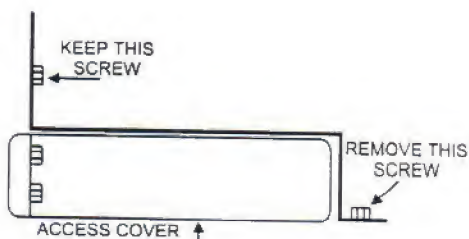


Fig 10. Coin Mechanism Covers

*To remove the Coin Mechanism Switch:*

4. Remove the front window.

**Note:** We recommend the use of an electric nut driver with a removable flexible shaft and 1/4" nut driver to help in performing the operations below. They *can* be done with hand tools, but a flexible shaft makes access to some of the screws much easier.

5. Using a 1/4" nut driver, remove the two screws attaching the Coin Mechanism Cover to the left wall.

6. The left acrylic bar which supports the window needs to be out of your way. Remove the screw nearest the left wall and rotate the bar up and to the right to get it out of the way. (You may have to *slightly* loosen the other screw holding the bar in order to do this.

7. Remove the screw holding the vertical Coin Mechanism cover to the front wall.

8. Remove the two screws holding the top half of the Coin Mechanism mounting plate.
9. Slide the plate up, removing it from the Coin Mechanism and lay the plate aside.
10. Lift the Coin Mechanism up to free it from the bottom half of the mounting plate.

11. Pull the Coin Mechanism carefully out through the mounting hole. On the back of the Coin Mechanism, you will see a small, roller-actuated Cherry switch attached to the Coin Mechanism. Insert a coin in the Coin Mechanism and rotate the handle while watching the roller. When the roller lifts up over the large cam, ensure that the tab is depressing the cherry switch far enough to actuate it. (The green LED adjacent to the coin input connector on the circuit board should light up when the roller is lifted by the cam.)

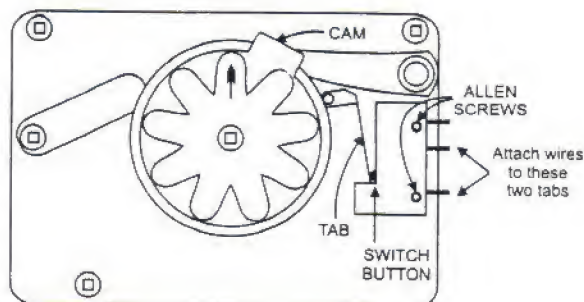


Fig 11. Coin Mechanism

12. If the LED does not light, carefully but firmly slide the electrical connectors off the tabs on the side of the roller actuated switch (**Caution:** Pull on the connectors, **not** the wires) and set the Coin Mechanism aside. Touch the metal parts of the two connectors together while watching the same green LED. If the LED lights, the wiring is good and you may suspect that the cherry switch is out of adjustment or has failed.

13. First, *try to adjust* the switch by doing the following: Continue to rotate the Coin Mechanism handle until the roller comes *down* on the far side of the large cam. Then use a pair of needle-nose pliers to carefully grasp the tab about 1/2 to 2/3 of the way from the roller toward the switch and bend the roller end of the tab *slightly* downward toward the cam. **CAUTION:** *This tab is relatively delicate so extra care must be exercised while performing this adjustment.*

14. If the switch still does not operate, hold the Coin Mechanism so that the switch is at the top and use a 2.5 mm Allen wrench to remove the *left* Allen screw from the cherry switch. This will remove the switch and its small mounting plate from the Coin Mechanism. Now remove the small mounting plate attached to the rear of the switch by removing the other Allen screw.

15. Attach a *new* switch to the small mounting plate with the Allen screw you last removed.

16. Position the switch so that the roller hangs down near the cam wheel and attach the switch to the Coin Mechanism with the other Allen screw. (The switch and mounting plate will only fit one way.)



17. Reattach the electrical wires as shown in Fig 10, and test the switch (see step 4 above). You should see the green LED light up when the roller is lifted by the cam.

*Remount the Coin Mechanism as follows:*

18. Carefully insert the new Coin Mechanism. (insure it is right side up) and slide it down onto the lower half of the mounting plate.

19. Slide the upper half of the mounting plate down into the grooves of the Coin Mechanism and reattach it to the front panel with the two 3/4" brass plated screws. **CAUTION!!!** Do not **over tighten** or you may **strip** the wood. *Use one of the lowest settings* if using an electrical driver.

20. Reattach the vertical Coin Mechanism Cover to the rear of the panel with the 1/2" brass plated screw.

21. Re-install the Coin Mechanism Cover using its two brass screws.

22. Rotate the left acrylic bar back into position and replace the screw which hold it in position. **Caution:** *Do not* over tighten this screw or you may strip the wood or cause the bar to shatter. If you are using a motorized drill driver, use the lowest setting.

23. Test by running several quarters through the mounted Coin Mechanism.



#### Procedure #4 - Emitter/Detector Trouble Shooting.

Oscar uses an Emitter/Detector (sometimes called an “electric eye”) system to “see” when the dispenser drops an acrylic ball to start the vending sequence. The emitter and the detector are mounted in an Optical Block. Although somewhat rare, when sunlight hits at just the right angle, either directly or reflected off the mirror, the bright light can fool the detector into thinking a ball has *not* gone by. Oscar’s brain will command the dispenser to drop another ball to try to begin the sequence. If the light continues from the same angle, the dispenser could possibly continue to be fooled and try again and again until several balls have been dropped onto the upper stairway. If Oscar does not sense an acrylic ball after four attempts, he will *shut down*.

1. Look at both wires going into the Optical Block to ensure they are fully seated and that the Detector side has clay packed around the wire to protect the back of the detector from sunlight.
2. If either the Emitter or the Detector has come out of the Optical Block, carefully push it back in to “seat” it. **Caution:** The wires from the LED itself are a bit delicate. *Care must be exercised* when seating the LED to prevent breaking either of the wires.
3. If you have had to “reseat” the *Detector*, pack the area around where the wire enters the Optical Block with modeling clay to prevent light from getting in from that side.
4. Look at the A Detector and the “A” Emmitter LEDs on the controller circuit board (see fig 7 for location). Both should be on. If they are not, the corresponding emitter or detector has probably failed and will need to be replaced.
5. If both LEDs are on, use your finger or a pen to interrupt the light beam in the Optical Block while you observe the “A” Detector LED. It should go out when the light beam is interrupted and come back on when it can “see” light from the Emitter.
6. If everything appears to be working properly, expect that you have now solved the problem or that stray light is somehow getting into the sensor.

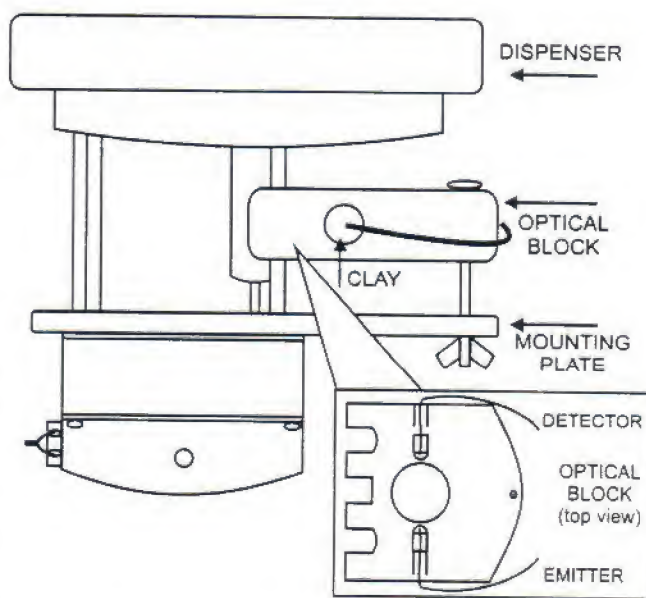


Fig 12. “A” Dispenser and Optical Block

7. Examine your location to see if sunlight can shine into Oscar. If it can, you may need to adjust your location a little.



## Procedure # 5 - Jammed "A" Dispenser

This is a rare problem indeed. The "A" Dispenser is used to recycle acrylic balls. If it jams, you may usually suspect foreign material or a need for lubrication.

1. The red plastic vending wheel is located above the Optical Block on the "A" Dispenser. If you look on the right hand side, you will be able to see the cogs on the bottom of the vending wheel. Use your fingers or thumbs to attempt to rotate the vending wheel. You will feel resistance from the motor but you should be able to rotate the vending wheel in one direction or the other.
2. If you can rotate the vending wheel but do not feel much resistance, you may have a loose shaft coupler. Look just to the left of the Optical Block while rotating the vending wheel to see if the shaft coupler is moving. *If the shaft coupler is not moving*, the top screw in the shaft coupler is loose. Turn Oscar on and run through one or more cycles to get the shaft coupler aligned so that you can get a 2mm Allen wrench into the head of the top screw to tighten it. **Note:** During manufacture, a non-permanent thread locking fluid is applied to this screw. This will make the screw quite difficult to turn. *Be sure* the Allen wrench is aligned with the screw *as perfectly as possible* to avoid stripping the head of the screw. You should not have to turn this screw very far to make it grip the shaft well.
3. *If the shaft coupler is moving* while little resistance is felt, the bottom screw of the shaft coupler is loose. Continue turning the vending wheel until the shaft coupler is aligned so that you can get a 2mm Allen wrench into the head of the bottom screw to tighten it. **Note:** During manufacture, a non-permanent thread locking fluid is applied to this screw. This will make the screw quite difficult to turn. *Be sure* the Allen wrench is aligned with the screw *as perfectly as possible* to avoid stripping the head of the screw. You should not have to turn this screw very far to make it grip the shaft well.
4. *If you can turn the vending wheel but it feels like the wheel is "dry" or rubbing on something*, remove as many acrylic balls as possible by reaching into the right side of the dispenser, removing the brass baffle, and then removing all the acrylic balls you can easily pick up.
5. Hold the balls in your hand and spray them with a spray silicone lubricant.
6. Roll the balls around in your hand so they are well lubricated and place them back in the dispenser. (**Note:** be sure to place the balls as far to the left side as possible so that they will fall into the vending wheel.) The liquid silicone will lubricate the vending wheel as the balls roll around in the dispenser.
7. Replace the brass baffle by holding it between your thumb and fingers and squeezing it so that it will fit back into the dispenser. The two vertical edges of the baffle should be touching the inside of the furthest corner posts. The natural spring of the baffle will hold it in place.
8. *If you cannot move the vending wheel in either direction* contact QLT Customer Service for assistance.

## Procedure #6 - Adjusting/Replacing the "B" Dispenser Switch.

The "B" Dispenser switch is mounted on an adjustment plate.

1. With the machine on, look at the "B" Dispenser Switch LED on the right side of the circuit board. The light should be *on* while the roller is rolling on the shaft connector. When the roller drops into the groove, the LED should blink *off* briefly and then go *on* again when the roller lifts up out of the groove. If the light remains on continuously, the switch adjustment plate is too high and must be lowered slightly.

2. Turn the cog wheel by hand until the switch roller drops into the groove.

3. Use a screw driver to loosen the two adjusting screws on the adjustment plate.

4. Lower the adjustment plate until the LED goes *out* and re-tighten the screws.

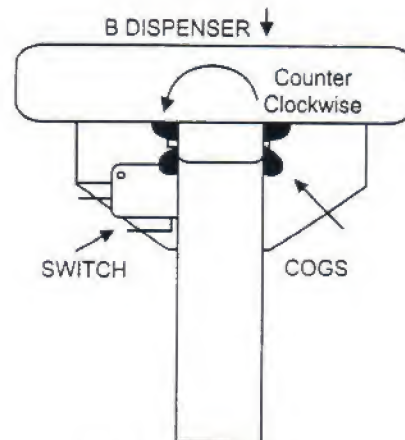


Fig 13. "B" Dispenser

5. Run another sequence. Observe that the light stays on until the "B" Dispenser shaft allows the roller to drop into the bottom of the groove. As the roller drops into the groove, the light should blink off momentarily and then go back on.

6. If the light does not go off when the roller drops into the groove, the adjustment was too little. Loosen the adjustment screws, lower the plate slightly, and re-tighten the screws.

7. Run another sequence to verify that you have adjusted the adjustment plate correctly.

*If the LED does not come on regardless of switch position, the switch has failed. Proceed as follows:*

8. *Loosen* the two adjustment plate screws and let the plate slide off.

9. Carefully but firmly, remove the two connectors from the switch. (**Caution:** Pull on the connectors, **not** the wires)

10. Remove the two 4-40 X 3/8" machine screws that hold the switch on the adjustment plate.

11. Attach the new switch to the adjustment plate with the same two screws.



12. Slide the adjustment plate onto the mounting plate. **Note:** Be sure the star washers remain between the head of the screw and the adjustment plate as you do this.
13. Slide the mounting plate up until the light goes on and then tighten both adjustment screws.
14. Run Oscar through a sequence to test switch alignment. If the LED does not go out when the roller drops into the groove, follow the steps at the beginning of Procedure #6 to adjust the switch.

## Procedure #7 - Clearing a Jammed "B" Dispenser

To determine whether the "B" Dispenser is jammed, run a normal sequence and watch the cog wheel mounted on the back of the dispenser. As the final elevator dumps the acrylic ball into the "A" Dispenser and starts back down, the front dispenser (the "B" Dispenser) should try to deliver a gumball. If the cog wheel seems to be trying but is unable to turn the dispenser wheel inside, you will see the machine shut down.

1. **Turn off** the Main Power Switch.
2. The cog wheel normally turns counter clockwise. (See Fig 12) Try turning the wheel *clockwise* just a little. (**Caution: Do not** turn the cog wheel very far in a clockwise direction. Doing so may cause the roller to jam in the groove, damaging the switch tab.) Expect considerable resistance as you will be overcoming the resistance of the motor and the product (gumballs) above the dispenser wheel, as well as clearing the jam.
3. Look up into the dispenser through the side of the clear plastic delivery tube. Try to see if a deformed gumball is causing the jam.

If you can see a jammed gumball but are unable to get it to drop:

4. Remove the delivery tube by squeezing both sides of it near the top and pushing the tube firmly toward the rear. When the tube pops out of the upper connector you will be able to lift it from the lower elbow.
5. Reach up into the dispenser with your finger and try to maneuver the stuck gumball until it drops out.
6. When you think you have cleared the jam, turn the Main Power Switch on and run Oscar through *three* normal sequences. **Remember!** When you turn the Main Power Switch *on*, Oscar will go through a normal "wake up". This sequence **does not** include running the "B" Dispenser. Running the dispenser through three sequences will run the vending wheel through one complete rotation so that you can ensure all vending wheel openings will dispense.
7. If Oscar *does not* function normally, turn the Main Power Switch *off* and keep working the vending wheel until the jam is cleared and then run a sequence to test your remedy.
8. If Oscar *does* function normally, slide the delivery tube into the lower elbow. Then squeeze both sides of the delivery tube near the top and pop the tube into place from the rear. Run at least two more test runs to insure that the dispenser appears to be working normally.



## Procedure # 8 - Adjusting the "B" Dispenser Vending Wheel

Part of the fun of Oscar is the illusion that the gumball has "magically" changed color. At the moment when the acrylic ball is returned to the "A" Dispenser, Oscar's brain "sees" the top switch of the "R" Elevator being actuated. The "start" command is then sent to the "B" Dispenser. The "B" Dispenser Vending Wheel is adjusted so that it will dispense a gumball almost immediately when it begins to move. This helps give the illusion that the ball which has just been through the action sequence, has changed color and is being dispensed. If the "B" Dispenser is not adjusted correctly, the vending wheel may have to make as much as one-third of a turn to dispense a gumball. To the customer, this feels like a very long time and he/she may think Oscar has malfunctioned. This feeling is reinforced if the customer has won an extra gumball and has to wait up to 2/3 of a turn for the second gumball. Therefore it is important to have the "B" Dispenser adjusted so that it will dispense a gumball almost immediately when it begins to move. To accomplish this:

1. Empty the gumballs from the area above the "B" Dispenser.
2. Remove the "cap" from the "B" Dispenser by removing the two 8-32 X 1/2 " stainless steel machine screws which hold it in place.
3. Run Oscar through one vending sequence and observe the final position of the vending wheel.
4. Since the wheel turns counter clockwise, the wheel should be stopping with one of the three holes just to the left (your left if you are standing in front of the machine and looking down on the vending wheel) of the opening where the gumballs fall into the vending tube.
5. If the wheel is out of position, lift it, turn it until it is in the correct position, and set it back down so that it is "seated" on the cog wheel which turns it.
6. Run Oscar through one more sequence to ensure that the wheel is now stopping in the correct position.
7. Replace the "cap" over the vending wheel ensuring that the "cap" part is over the opening where the gumballs fall into the tube.
8. Secure the cap by replacing the two 8-32 X 1/2" stainless steel machine screws. (Hint: Putting



Fig 14. Top View of Dispenser

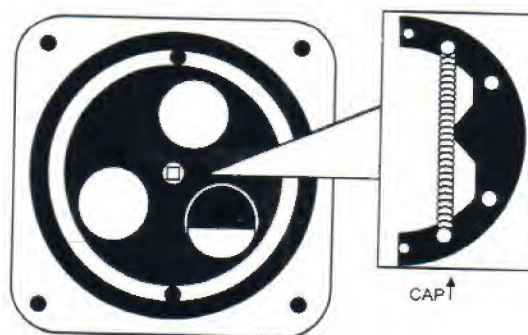


Fig 15. Replacing Cap Correctly



a drop of acrylic nail polish on the threads of each machine screw will “lock” the screws and keep them from vibrating loose during repeated operation.)

9. Refill Oscar with 850 count gumballs.

## Procedure # 9 - Adjusting the Staircases

Each stair in the staircase is made up of a plastic sleeve, a cable clip, and a machine screw with brightly colored trim. In order for Oscar to operate properly, each stair must swing freely.

1. Run your finger down the bottom side of each staircase bumping the brass trim of each stair as you go. If any of the stairs "hang up" and do not swing freely back and forth, try to determine what is making them hang up. If stairs hang up by crossing and catching on the stair above/behind them, realign the stairs slightly to make sure they are *directly behind each other*.

2. If stairs *do* "hang up" without catching on the stair behind them, it will usually happen about half-way down the staircase. This generally means that the plastic sides of the staircase have warped slightly inward so that the plastic sleeves are rubbing against them.

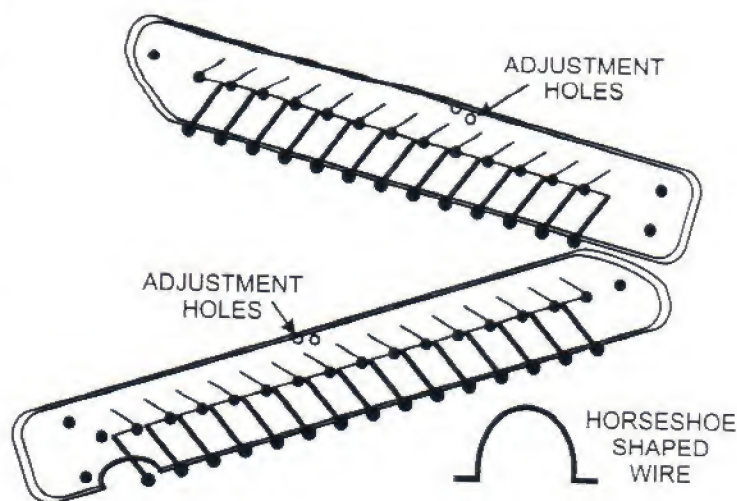


Fig 16. Staircases

3. Cut a piece of wire about 1-1/2 inches long from a thin coat hanger or other stiff wire. Bend it in a horseshoe "with ears" like the illustration in fig 16.

4. Insert one of the "ears" in each hole that you will find midway down the top rail of each of the stairways. The natural spring of the metal horseshoe you have made should push the sides of the staircase far enough apart to free up and stairs which are not swinging freely.

If this does not work:

5. Take out the horseshoe, bend its legs farther apart and reinsert it. If an individual stair is still sticking:

6. Grasp the machine screw supporting the stair and attempt to move it in and out. There should be at least 1/16" play. In other words, if the head of the machine screw is against one side of the stairway, the brass plated hex nut on the front side of the stairway should have some space between it and the side of the stairway. If it does not, you will need to loosen the brass plated acorn nut about half a turn and then tighten the hex nut toward the acorn nut. *This will require two 5/16" end wrenches.*

7. Ensure all individual stairs are now swinging freely.



## Procedure # 10 - Adjusting the Whirly

The Whirly is stopped by a magnetic switch mounted on top of a green arc. If you look down on the Whirly, you will see this switch at the four o'clock position under the whirly. The little gray box with wires out the end is the switch. The switch is mounted to grip the arc quite tightly but can be moved forward or back.

1. Determine whether the Whirly is stopping a little early or a little late by looking at its alignment under the Rail Spring.

If the Whirly is stopping a little too soon:

2. Rotate the switch a little away from you.

If the Whirly is stopping a little too late:

3. Rotate the switch a little toward you.
4. Run Oscar through another cycle to determine whether your adjustment was about right. If not, readjust as necessary.

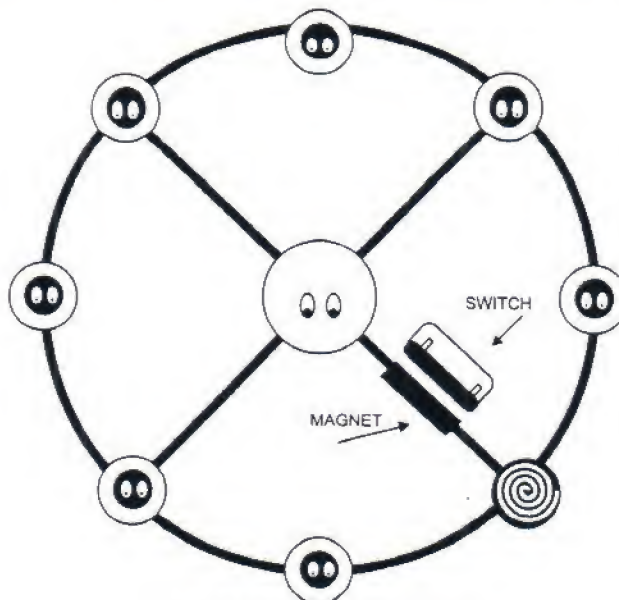


Fig 17. Whirly and switch

If the Whirly "drifts" a long way past the switch:

5. Try turning the Whirly by hand. If it is easy to move and you do not feel resistance from the motor, watch to see if the large yellow ball on top of the Whirly shaft moves as you move the Whirly. If the ball does not move, the hex nut just above or just below the blade has come loose.

6. Use a 7/16" end wrench to tighten the nut either above or below the Whirly Blade.

**Caution:** There are two clearances that are important when tightening either of these nuts. The Whirly Blade, when adjusted correctly, just clears the vertical cover behind the Coin Mechanism. If it does not clear this cover, the Whirly will rub or hang up on the cover. If the Whirly Blade is set too high, the Whirly Spring may not clear the Rail Spring at the end of the rail, or may hang up on the Whirly Dump Rod. If you can set the Whirly to just barely clear the cover behind the Coin Mechanism, everything should be fine.

If the large yellow ball at the top of the Whirly does turn when you turn the Whirly, the shaft coupler at the bottom of the Whirly shaft has come loose. While turning the Whirly, look at the shaft coupler

to determine whether the coupler is turning with the shaft. If the coupler is not turning, the upper set screw is loose:

7. Use a 2mm Allen wrench to tighten the upper set screw on the side of the shaft coupler.

If the coupler *is* turning, the lower set screw in the coupler is not tight enough. Call QLT customer service for help.

When the Whirly starts moving, the ball should stay in the Whirly Spring. If the ball is falling out, either the Rail Spring is dragging it out or the Whirly Spring on the Whirly (Carousel) needs adjusting. Run Oscar through a sequence and observe closely to see if the Rail Spring is dragging the ball off. If it is:

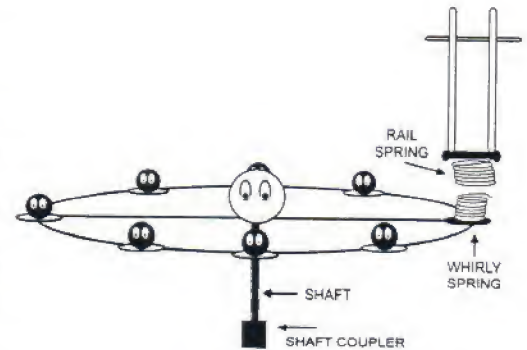


Fig 18. Whirly Spring and Coupler

1. Adjust the bottom of the Rail Spring upward a little so that it just clears the ball when the Whirly begins to move.

If the Rail Spring does not appear to be dragging the ball off the Whirly (Carousel) Spring:

2. Turn the Whirly Spring *slightly* counterclockwise so that the end of the Whirly Spring provides support to keep the ball from rolling off when the Whirly (Carousel) starts to move.
3. If the ball still falls off, "open" the Whirly Spring *very slightly* to allow the ball to sit down in the spring a little farther. **Caution:** If you open the spring too much, the ball will "seat" so well that it will be difficult for the Dump Rod to dump the ball onto the table as the Whirly rotates (see *Procedure #11* below). The ball will ride fairly high on top of the spring when it is adjusted correctly, and may appear a little unstable, but will not fall off.



### Procedure # 11 - Adjusting the Whirly Dump Rod

If the acrylic ball is “jumping” out of the Whirly Spring when the ball contacts the Dump Rod, it is likely that the Whirly Dump Rod is set *too high*. When the rod is set correctly, it just touches the top of the Whirly Spring when the spring is *empty*. When a ball is on the Whirly Spring, the spring will compress slightly but ball will sit high enough that the Dump Rod will strike the ball just below its midpoint (or its *equator*). This adjustment will cause the ball to be lifted out of the spring and gently rolled over the side.

1. You may reset the rod by bending it down slightly until it just touches the empty spring as it comes by.

If you have the Dump Rod set correctly and the ball is still “jumping” out of the spring or does not come out of the Whirly Spring at all, the spring may have to be “closed” a little to make the ball ride higher:

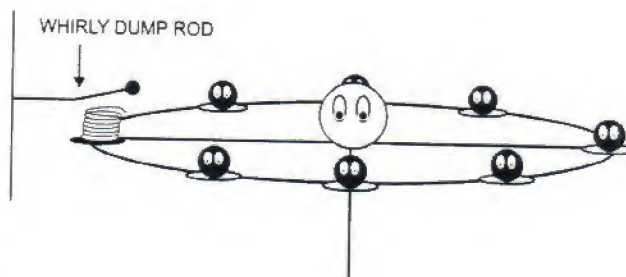


Fig 19. Whirly Dump Adjustment

2. Carefully but firmly bend the top loop of the Whirly Spring around a little tighter to make the top loop *slightly* smaller. The ball will now ride a little higher allowing the Dump Rod to achieve a smooth dump. (If you have trouble making this adjustment, see Appendix 1, *Adjust Mode Features*, for instructions on continuously running the Whirly while making this adjustment.)

### Procedure #12 - Adjusting Table Height

The Table is mounted on three legs and has a plastic rail on each side to guide the ball into the elevator. If you look down the Table toward the elevator, the elevator should appear to be centered between the two rails. Place an acrylic ball near the end of one of the plastic rails right next to the elevator. If the ball will stay in place without rolling into the elevator, the most likely cause is that the Table is a little too low in relation to the elevator.

1. Reach under the playfield and locate the leg of the Table nearest the elevator.
2. Try lifting up on that leg slightly. If the leg can be lifted, the hex nut above or the hex nut below the playfield has vibrated loose.
3. Use a 5/16" end wrench to turn the upper hex nut in a clockwise direction until the end of the Table raises high enough that the acrylic ball rolls into the elevator every time and cannot be balanced between the end of the Table and the edge of the elevator channel (the horseshoe shaped piece on top of the elevator floor).

4. When the Table is adjusted to the correct height, reach *under* the playfield with your 5/16" end wrench and firmly tighten the hex nut on the same table leg.

If the elevator does not appear to be centered between the ends of the two bars on the sides of the Table, you may have to move the end of the Table next to the elevator a little to the right or left by bending the legs slightly. Make the adjustment carefully but firmly. Once the Table and elevator are lined up properly, you may need to make the adjustments in steps 1-4 above.



### Procedure # 13 - Adjusting Elevator Dump Rods

The figure at the right is a drawing of the elevator. When the elevator reaches its top position, the elevator floor contacts the Dump Rod and tilts the elevator floor to dump the ball. The horseshoe shaped piece mounted on the elevator floor is called the elevator channel. Its function is to hold the ball until it is time to dump. To dump correctly, the elevator floor must contact the Dump Rod but the elevator channel should not cause the elevator to hang up. To adjust the Dump Rod, simply bend it away from the elevator slightly until the elevator dumps without hanging up.

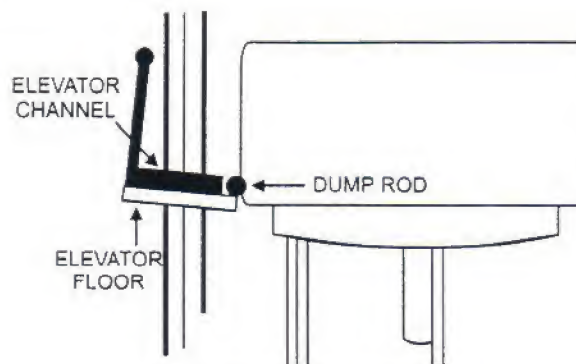


Fig 20. Elevator and Dump Rod

### Procedure # 14 - Replacing Elevator Strings

Elevator Strings may become dirty or worn over time. If this should occur, the Elevator String may be replaced.

1. Select a good brand of *braided nylon string*. This can be purchased at a hardware store. Ask for the type used by contractors to lay out foundations. We recommend braided rather than twisted string.
2. Start with 96 inches of string.
3. Turn Oscar "off," remove the front window and set it aside where it will not be knocked down or scratched.
4. Cut the old string where it comes in through the clear arc on the elevator.
5. Use one strand of copper wire such as that found in lamp strings as a threading tool. Fold the strand in half across one end of the new String and twist the copper wire strand so that the String will not slip out. Insert the copper wire *down* through the hole in the top of the Elevator Arc and pull the String down through the hole.
6. Remove the copper wire and tie a very fat knot in the end of the String so that it cannot go back up through the hole in the Elevator Arc.

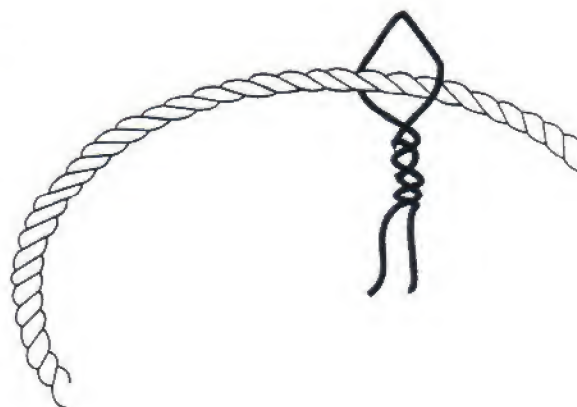


Fig 21. Wire as a threader

7. Route the String up and over the pulleys (single pulley for the "C" Elevator) and down through the appropriate hole in the trough.
8. Open the bottom door.
9. Grasp the knot in the old String and pull it out of the pulley.
10. Insert the new String down through the "V" in the pulley and out through the hole provided.

11. Rotate the pulley so that the hole is in the 9 o'clock to 10 o'clock position.

12. Pull on the string until it is tight when the elevator is full down, and use a marking pen to mark where the String exits the side of the pulley.

13. Pull the String out through the side of the pulley (this will lift the elevator) and tie a very fat knot at your mark.

14. Release the String slowly so that the *elevator is not allowed to drop* to its lowest position.

15. Turn Oscar back on and watch the "wake up" sequence. When the sequence is over, the elevator will be at its lowest position.

16. Check to ensure that the pulley is stopped with your knot at the 9 o'clock to 10 o'clock position. If the knot is not in that position, repeat steps 13 - 15 until the string is adjusted properly.

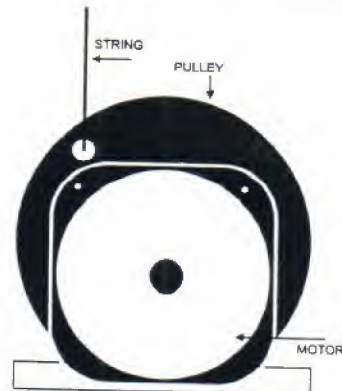


Fig 22. Pulley position with Elevator full down.

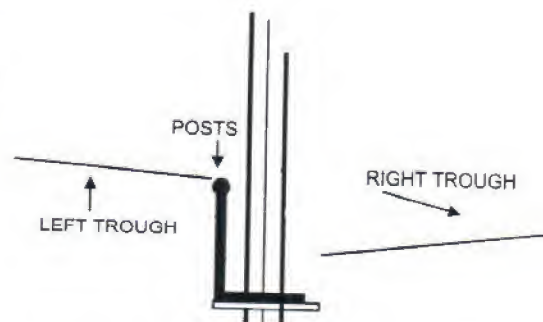


Fig 23. Correct Elevator full down position



## Procedure # 15 - Testing the "R" Elevator

If the "R" Elevator goes to the top, hangs up and "chatters", and then Oscar shuts down, the most likely cause is that the elevator did not "see" the "R" Elevator Down (lower) Switch. When this occurs, the elevator will go all the way to the top, chatter, and shut Oscar down. The elevator will also almost always "reverse wind" on the pulley attached to the motor.

1. Open the lower door and look toward the left rear corner. The "R" Elevator motor is the one farthest to the left. You will probably find a mis-wound and tangled pulley.
2. Untangle the pulley by turning it by hand until you get the elevator itself to the lowest point and the pulley is completely unwound.
3. Turn the pulley counterclockwise until the knot which attaches the string to the pulley is at the 9:00 to 10:00 o'clock position.
4. Locate the "R" Elevator Down LED (Light Emitting Diode) on the right hand side of the controller. (It is the fourth green light back on the right side of the board.)
5. Use the pulley on the motor to run the elevator up and down a little. When the elevator is at its full down position, the LED should light up showing switch activation.

**If the light does not light up**, the elevator has not recognized the lower switch. (If the light does light up, see highlighted title after Step 11.)

6. The switch is mounted on a rod attached to the center back wall of the lower cabinet. The switch looks like a small gray rectangular box with wires protruding from one end. It is activated by a magnet which is enclosed in a similar small gray rectangular box mounted on the bottom of the elevator itself. When the magnet is about 1/4 - 3/8" from the switch, it will activate the switch.

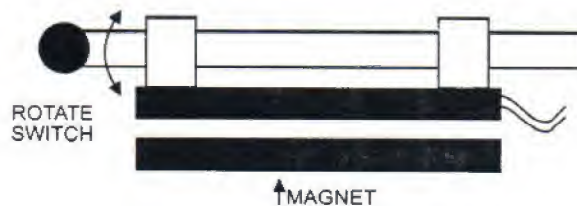


Fig 24. Switch and Magnet

7. Check to verify that the magnet is getting close enough to the lower switch to activate it. If it is *not* coming within 1/4 to 3/8" from the switch, you will have to twist the switch around its mounting rod to move it up a little closer to the elevator. If the magnet is getting close enough to the switch but the switch is not activating (LED is not lighting up), you either have a burned out fuse, the magnet has fallen out of its case, or the switch has failed.
8. Check the fuse location on the layout attached to the inside of the front door. Turn the Main

Power Switch "off" and replace the fuse with another 250 milli amp (1/4 amp) fuse. (**Note:** You may have to use a pair of needle-nosed pliers to remove the fuse. The fuse will come out without difficulty, but the fuses are so close together that it is difficult for many people to get their fingers into position to pull the fuse out.)

9. Turn the Main Power Switch back "on" and watch Oscar go through his "wake up" routine. The "R" Elevator is the last item of the routine. Watch the "R" Elevator Up LED to see it blink on, then off when the upper switch is recognized. The "R" Elevator Down LED will light up and stay lighted when the elevator returns to its starting position.

10. If the light does not come on, check to see if the magnet may have fallen from its gray case on the bottom of the elevator. The magnet is a small "rod magnet" which slides into the gray box mounted on the bottom of the elevator and is held in place by a small glob of silicone gel. If you look at the end of the box and see what looks like an empty open box, the magnet has likely fallen out. If you see a yellowish rounded blob, the gel is in place and the magnet is inside. If the end of the box is flat and gray, the opening for the magnet is at the other end. Feel the far end of the box. If it feels smooth and rounded, the silicone is in place and so is the magnet. If the box feels like the cap is gone, the silicone is gone and the magnet may have fallen out. Contact QLT Customer Service.

11. If the magnet appears to be in place, but you still do not have a lighted LED when the elevator is at the bottom, the switch has failed. Contact QLT Customer Service.

**If the "R" Elevator Down Switch LED does light up, but the elevator continues to the top, "chatters," and shuts Oscar down, suspect a failed "R" Elevator Up Switch.**

1. Locate the "R" Elevator Up LED (Light Emitting Diode) on the right hand side of the controller. (It is the third green light back on the right side of the board.)

2. Turn the pulley on the motor counter clockwise to run the elevator up to its highest position. When the elevator is close to or at its full up position, the LED should light up showing switch activation.

The switch is mounted on a rod attached to the center back wall of the upper cabinet. The switch looks like a small gray rectangular box with wires protruding from one end. It is activated by a magnet which is enclosed in a similar small gray rectangular box mounted on the top of the elevator itself. When the magnet is about 1/4 - 3/8" from the switch, it will activate the switch.

3. Check to verify that the magnet is getting close enough to the upper switch to activate it. If it is not coming within 1/4 to 3/8" from the switch:

4. Twist the switch around its mounting rod to move it down a little closer to the elevator. If the



magnet is getting close enough to the switch, but the switch is not activating (LED is not lighting up), you either have a burned out fuse, the magnet has fallen out of its case, or the switch has failed.

5. Check the fuse location on the layout attached to the inside of the front door or Fig 7 in this book. Turn the Main Power Switch "off" and replace the fuse with another 250 milli amp (1/4 amp) fuse. (Note: You may have to use a pair of needle-nosed pliers to remove the fuse. The fuse will come out without difficulty, but the fuses are so close together that it is difficult for many people to get their fingers into position to pull the fuse out.)

6. Turn the Main Power Switch back "on" and watch Oscar go through his "wake up" routine. The "R" Elevator is the last item of the routine. Watch the "R" Elevator Up LED to see it blink on, then off when the upper switch is recognized. If you see the light come on, the elevator will be back to normal.

7. If the light does not come on, check to see if the magnet may have fallen from its gray case on the bottom of the elevator. The magnet is a small "rod magnet" which slides into the gray box mounted on the top of the elevator and is held in place by a small glob of silicone gel. If you look at the end of the box and see what looks like an empty open box, the magnet has likely fallen out. If you see a yellowish rounded blob, the gel is in place and the magnet is inside. If the end of the box is flat and gray, the opening for the magnet is at the other end. Feel the far end of the box. If it feels smooth and rounded, the silicone is in place and so is the magnet. If the box feels like the cap is gone, the silicone is gone and the magnet may have fallen out. Contact QLT Customer Service.

11. If the magnet appears to be in place, but you still do not have a lighted LED when the elevator is at the top, the switch has failed. Contact QLT Customer Service.

### **Procedure #16 - Aligning the Coaster Track**

If balls suddenly begin hanging up on the Coaster Track, or if balls begin jumping off the Coaster Track, it usually means that a coaster clip is slightly out of adjustment.

1. Locate the coaster clip just below the area where the balls are hanging up and change its tilt angle a little. (Generally steepening the angle of tilt a little will release the balls.)
2. If steepening the angle of tilt does not work, try flattening the angle of tilt slightly.

3. If the track will not maintain the new setting, you may need to grasp the pink tubing on each side of the coaster clip and twist it within the clip. Now let go and see if the track maintains its setting. Adjust further as necessary.

If the ball is jumping off the track you probably need a little more tilt angle in the curve where the jump is occurring. Adjust as explained above.

There are conditions under which acrylic balls may hang up by hitting the side of the mount for the product delivery tube. A simple adjustment that usually is very successful is to tilt the coaster clips on each side of the elbow slightly away from the front of the machine. This creates a small detour around the elbow at the bottom of the product delivery tube.

### **Procedure #17 - Coaster Mounts**

Coaster Mounts are simply coaster clips which have been permanently mounted on a bracket. There are four Coaster Mounts: two on the left wall, and two on the inside of the front panel. Once in a while, the center spine of the Coaster Track may pop up out of the clip.

1. Try snapping the spine back into position in the appropriate clip. This is generally not easy. **Note:** If you have to use pliers or vice-grips to pop the spine back into position, pad the jaws of the pliers with masking or other tape to avoid marring the finish on the spine.

2. If the spine continues to pop out, you may use a drop of contact cement (we recommend cyanoacrylate medium thickness, found in hobby shops) to glue the spine to the coaster clip. If you do this, it works well to apply the cement, pop the spine into position with a pair of vice grips, and leave the vice grips in place for a couple of hours.



### Procedure #18 - Adjusting the Lower Ball Guide

Examine the Lower Ball Guide and note its two loop construction.

1. Put a ball on the Coaster Track about at the reverse curve area and let it run to the end. If the acrylic ball bounces back up the track...

2. Squeeze the top loop down a little closer to the track.

3. Put the ball back on the Coaster Track and let it run to the end again as you observe its action.

4. Continue squeezing and testing until the ball is guided directly into the bucket and stops without bouncing back up the track.

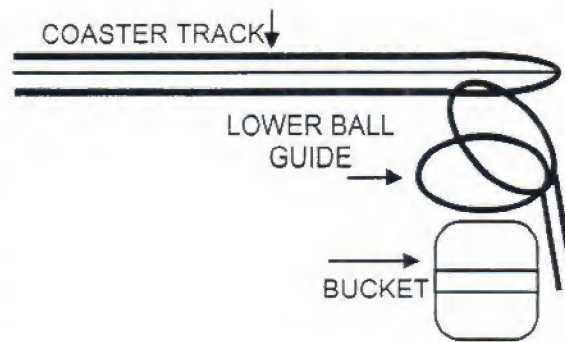


Fig 25. Lower Ball Guide

### Procedure # 19 - Aligning Crank (Tram) Bucket Switches

The switches used in Oscar are called non-invasive magnetic switches. They consist of a liquid switch in a small oblong box with two wires coming out, and a magnet in a small oblong plastic box without any wires. (See p. 40, Fig 20) In the case of the bucket, the magnet is mounted on the bucket arm. The switches are mounted on green arcs on the upper and lower right wall. To be most effective, the magnet and the switch should be aligned directly opposite each other, parallel to each other and approximately  $3/8$ " apart for the switch to be activated. In order to adjust either of the switches, rotate the switch mounting brackets around the mounting arc to move the switch closer to or farther away from the switching position of the magnet.

1. Run Oscar through one sequence and note the position of the Bucket.
2. Adjust the bottom switch to a position where it should switch.
3. Run Oscar through another sequence and note the new Bucket position.
4. Refine your adjustment, if necessary.

### Procedure #20 - Adjusting the Drop Rod

If the Drop Rod is allowing the ball to prematurely drop through the Drop Block onto the Trampoline, bend the rod slightly toward you until it is a little more under the hole in the Drop Block. The rod is in adjustment when it will *just* hold the ball in the Drop Block. To make your customer happy, the ball should stop in the Drop Block but should drop immediately when the customer pushes the Drop Button. (If you are having difficulty making this adjustment, see Appendix 1. After selecting Adjust Mode, see paragraph "e" of that section.)

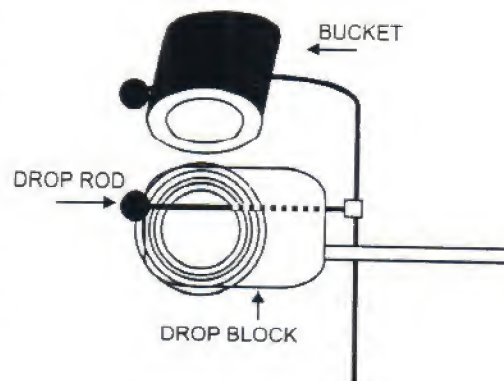


Fig 26. Drop Rod

### Procedure # 21 - Adjusting the Trampoline

1. Observe the path of the acrylic ball when the Drop Button is depressed.
2. Range. If the ball is bouncing a little too far, open the door to the controller and reach underneath the Trampoline to loosen the wing nut you will find there. Then move the Trampoline a little closer to the front of the machine (toward you). If the ball is falling short, move the Trampoline a little toward the back of the machine (away from you).
3. Direction. If the ball is going too far toward the left, move the Trampoline toward the right and vice versa.
4. Run Oscar through another cycle and observe your correction. Readjust as necessary.
5. Continue to adjust until the ball is going to the Hoop, then tighten the wing nut to hold the Trampoline solidly in position.

**Note:** If you are having a lot of difficulty making this adjustment, see Appendix 1 to use the Adjust Mode. This will allow you to repeat the dump cycle as necessary without having to run the entire vending cycle. Adjusting the Trampoline is Step "e" in that appendix.



## Procedure # 22 - Drop Button

The Drop Button should light up when a ball drops out of the Bucket into the Drop Block. If this does not happen, the lamp has probably burned out.

1. Open the front window and set it aside in a place where it will be out of the way to keep it from being knocked over or scratched.

2. Look down inside the machine behind the Drop Button. You will observe a black tube with a white switch assembly attached to it. Check to insure that the two white wires (one connected to the upper side of the switch and one to the lower side) are connected to the switch assembly. If either wire is disconnected...

3. Reconnect the wire by sliding the female connector firmly onto its tab. If both wires are already firmly connected, the lamp has burned out. . .

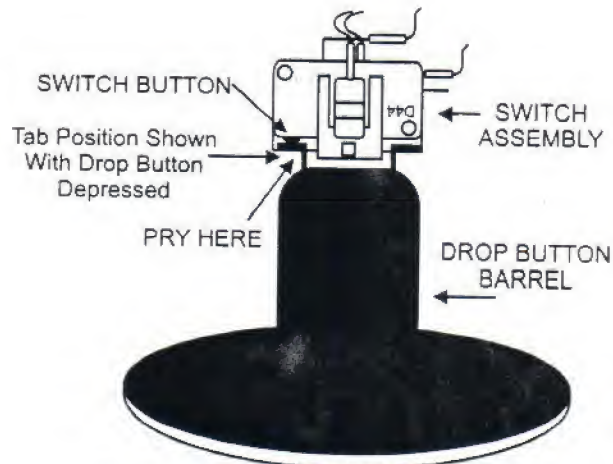


Fig 27. Drop Button Switch Assembly

To replace the lamp:

4. While observing the switch assembly area, push the Drop Button and notice that two small white plastic tabs at the end of the black tube will move toward the rear.

5. Hold the Drop Button in its depressed position and insert a fine-bladed screw driver down the left side of the Switch Assembly next to the black plastic tube and under the white plastic plate (*not* the white plastic tabs). Pry the white assembly away from the black tube. **Note:** *Never* pry between white and white. With a little careful work, the white assembly will begin to slide out of the black tube. You will now see the lamp.

6. Slide the lamp straight out and replace with a #161, 14 volt, wedge base lamp.

7. Slide the switch assembly firmly back into the tube by rocking it to one side while pushing forward until you feel it begin to seat. Now rock the assembly the other direction and feel it "click" into place. The Switch Assembly should now be firmly seated and virtually impossible to remove without tools. **Note:** This firm fit is important! If the Switch Assembly is not firmly seated in the black tube, use of the Drop Button may push the assembly back out of the tube causing the switch to *not* initiate the drop sequence.

If the Drop Button fails to cause the ball to drop immediately when the button is depressed, you may have a switch failure. *To test for switch failure:*

1. Remove the front window and set it aside where it will not get knocked over or scratched.
2. Open the front door and locate the Drop Button LED (Light Emitting Diode) on the chart. It is the ninth green LED back on the right side of the board. The LED should be out.
3. Observe the LED while depressing the Drop Button. If the LED does not illuminate when the Drop Button is depressed...
4. Look down into the area directly behind the Drop Button and depress the button once more. You will see a small white tab near the left edge of the black tube move toward the rear of the machine and depress a tiny red switch. (See Fig 27) If the white tab does not go far enough back to depress the switch...
5. Check to see if the white switch and light assembly have begun to slide out of the black tube by pushing the whole assembly toward the back of the Drop Button. If this assembly moves at all, the switch assembly is not "seated" in the black tube.
6. Reseat the assembly by rocking the assembly slightly to one side while firmly pushing it into the tube. When you feel the assembly begin to "seat," rock the assembly toward the other side while continuing to push it firmly into the black tube. You will feel the assembly "click" into place. The Switch Assembly should now be firmly seated and impossible to slide out of the black tube without the use of tools.
7. Depress the Drop Button and observe that the white tab is now depressing the tiny red switch.
8. Depress the Drop Button while observing the Drop Button LED on the controller. The LED should illuminate when you depress the Drop Button. If the LED does not illuminate, remove the Switch Assembly from the black tube by looking down behind the Drop Button and doing the following:
9. Push the Drop Button and observe the two small white plastic tabs move to the rear.
10. Hold the Drop Button depressed and insert a fine-bladed screw driver down the left side of the Switch Assembly next to the black plastic tube and under the white plastic plate (not the white tabs). Pry the white assembly away from the black tube. **Note:** *Never* pry between white and white. With a little careful work, the white assembly will begin to slide out of the black one.
11. Use the same small screw driver to pry the supporting plate away from the upper left corner of the switch while rotating the switch clockwise. This will release the switch from its mounting plate.
12. Slide the connectors for the two white wires off their tabs on the top and side of the switch.
13. Replace the failed switch with a Cherry D41L-R1AA switch by connecting the wires to the top tab and the side tab of the switch.



14. Depress the tiny red button while observing the Drop Button switch on the controller board. The LED will illuminate when the button is depressed.

15. Place the switch on its mounting plate by placing the switch over the small locating pin which fits into the lower right hole in the switch.

16. Rotate the switch counterclockwise until it snaps into position with the other locating pin in the upper left-hand hole.

17. Reseat the assembly by rocking the assembly slightly to one side while firmly pushing it into the tube. When you feel the assembly begin to "seat," rock the assembly toward the other side while continuing to push it firmly into the black tube. You will feel the assembly "click" into place. The Switch Assembly should now be firmly seated and impossible to slide out of the black tube without the use of tools.

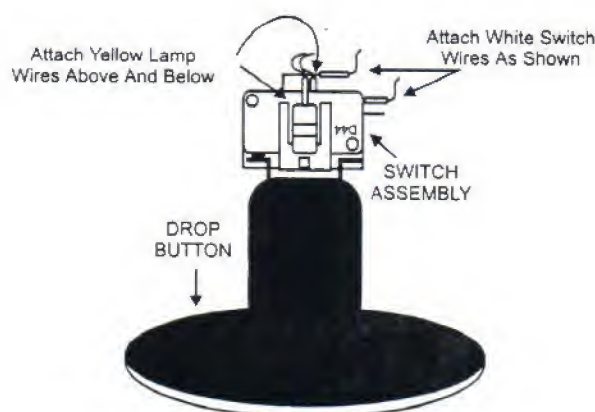


Fig 28. Switch wiring

18. Replace the wires as shown in Fig 28.

19. Depress the Drop Button while watching the area where you have just mounted the switch. You will see a small white tab depress the tiny red switch button.

19. Depress the Drop Button while observing the Drop Button LED on the controller board. The LED will illuminate when the button is depressed.

20. Run Oscar through a sequence and test to ensure that the drop button is now functioning properly.

### Procedure # 23 - Replacing the Hoop Switch

1. Open the front window and set it aside in a place where it will be out of the way to keep it from being knocked over or scratched.
2. By looking in the mirror behind the Hoop Assembly, insure that the two white wires leading to the switch attached to the rear of the Hoop Assembly are firmly attached.
3. Open the front door and locate the Hoop (Basket) LED (Light Emitting Diode) on the chart. It is the tenth green LED back on the right side of the board. The LED should be out.
4. Observe the LED while gently depressing the tab at the bottom of the basket. If the LED does not illuminate when the tab is depressed, the switch has failed.
5. The switch is held in place by two No. 6 X 1/2" sheet metal screws. Use a 1/4" nut driver driver to remove these screws.
6. Detach the two wires from the switch by firmly sliding the connectors off their respective tabs.
7. Replace the switch with a Cherry D44L-R1ML switch. **Note:** The length of the lever (2.932") and the force needed to depress the lever (approximately 10 grams) are important to the proper functioning of your Oscar machine.
8. The tab on the old switch is made from a plastic material called "Sintra". Some similar material may be cut to size and hot glued to the switch lever. **Note:** Notice the location of the tab on the lever. You must leave enough space for the lever to extend through the slot in the backboard without hanging up. Use the old switch as an example of proper mounting position.
9. Reattach the wires by sliding the female connectors firmly onto the two bottom tabs.
10. Reattach the switch on its bracket with the same two sheet metal screws.
11. Observe the Hoop (Basket) LED on the right side of the controller board while gently depressing the tab on the new switch. The LED should illuminate when the tab is depressed.
12. Run Oscar through a vending cycle to ensure that everything is working properly.

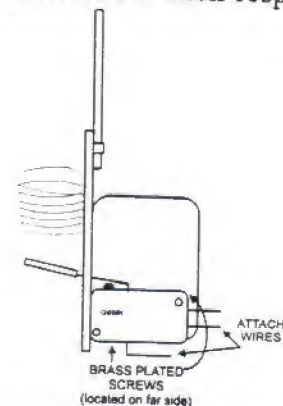


Fig 29. Hoop Switch detail



## Appendix 1

### Adjust Mode

The Adjust Mode is used at the factory to test and adjust the various modules which make up Oscar. There are times when *you* may wish to repeat the actions of a particular module without repeating the entire vending sequence. Adjust Mode allows you to do this as outlined below:

#### Selecting Adjust Mode

1. Turn the Main Power Switch to "off."
2. Select Adjust Mode by rocking the Adjust/Normal Switch (third switch back of the Operation Mode Selection Switches) *down* to the left.
3. Turn the Main Power Switch to "on." *Oscar will memorize the position of the Operation mode Selection Switches and will stay in the Adjust Mode until you turn the Main Power Switch off and select a different mode of operation.*

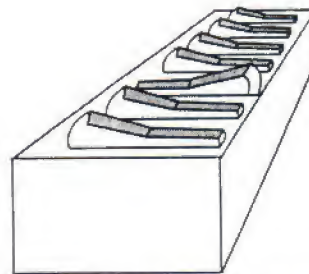


Fig 30. Adjust/Normal Switch

You will see the normal "wake up" sequence, after which the Crank, the Whirly (Carousel), and each elevator will move out of its normal position. The Halogen Lights will also turn on and remain on. You may now select which action to adjust by moving the appropriate module part to bring it near or in contact with one of its switches. **Note:** Once the machine has gone through "wake up" in the **Adjust Mode**, you may begin the Adjust Mode for any component by simply moving its moving part near any of its switches. This does not have to be done in any particular order except that you should *always* switch modules when going to the next adjustment.

**(Note: Do Not attempt to change actions of the same module, i.e. "R" Elevator up to "R" Elevator down, or Crank up to Crank down.)** The explanations below will give details on each test which can be accomplished in the Adjust Mode:

- a. **"R" Elevator Down.** This is the mode that Oscar will automatically select first. The "R" (Return) Elevator will travel upward for approximately 6 inches and then return to the bottom. The elevator will pause and then repeat the cycle until another module is selected. In this mode you may determine whether the "R" Elevator Down Switch is positioning the elevator correctly in the down position. The elevator should stop *low enough* that balls can enter from the left over the top of the two upright hex posts. The elevator should also stop *high enough* that a ball coming in from the left side can roll all the way across the elevator channel (horse shoe) and bump against the right trough without falling down into the controller area.



b. **"R" Elevator Up.** Shift into this mode from any other adjust mode *except* "R" Elevator Down. While Oscar is in any of the other Adjust Modes, reach in and turn the motor pulley counter-clockwise until the elevator is at the top. Sit back a few moments and wait for the previous sequence to end. Oscar will now move the elevator down approximately 6 inches, reverse and bring the elevator to the top, pause and repeat the sequence until another module is selected. **Note:** *The following two adjustments can usually be made without using the "R" Elevator Up Adjust Mode.* They are simple enough that they can be done during a normal sequence without much trouble. However, if you are having a hard time getting the adjustment correct, using the "R" Elevator Adjust Mode may be handy.

The "R" Elevator Adjust Mode may be used for assessing whether the Elevator Dump Rod is adjusted correctly. You will be able to spot any hangups pretty quickly. The green floor of the elevator should be contacting the Dump Rod to dump the elevator, but the Dump Rod should not be hanging up on the Elevator Channel (the horseshoe shaped piece glued to the elevator floor). Additionally, you can tell if the elevator switch is set correctly. If the switch is set a little too low, the acrylic balls will barely roll off the elevator and the elevator may be on the verge of not dumping the ball. If the switch is set a little too high, the elevator may force itself past the Dump Rod and then come down on top of the Dump Rod causing the elevator to fail to descend.

c. **Whirly (Carousel) adjustment.** Shift into this mode from any other Adjust Mode by turning the Whirly around until the magnet (on the bottom of the arm the Whirly Spring is on) is directly over its switch. Wait for the previous sequence to finish. The Whirly will now turn, pause at its "home" position and turn again. This sequence will be repeated until a different module is selected. This mode is an excellent way to adjust three items. *First*, the Whirly Dump Rod. After adjusting the Dump Rod so that it just barely clears the top of the Whirly Spring, simply put a ball in the Whirly Spring and observe the dump. The rod should contact the ball below its midpoint (equator) and smoothly roll it over the side of the Whirly Spring. If the rod is not low enough, the ball will catch a little between the rod and the inside of the Whirly Spring causing the ball to "jump" out of the Whirly Spring. *Second*, you will be able to easily see whether the Whirly Spring is stopping in the right position to receive the ball when it drops from the rail. If it is a little short or a little long of the right position, adjust the switch by rotating it a little closer or a little farther away from where the Whirly is presently stopping. *Third*, you can also see if the Rail Spring is set correctly. If the Rail Spring is dragging the acrylic ball out of the Whirly Spring as the Carousel starts, the Rail Spring needs to be adjusted a little higher. If you suspect the Rail Spring is set a little too high:

1. Turn off the Main Power Switch while the Whirly Spring is in the right place to receive the ball.

2. Drop a ball through the Rail Spring into the Whirly Spring.

3. Move the ball gently with your finger or a pencil to try to push it over the side of the Whirly Spring. The Rail Spring should keep the ball from going over the side of the Whirly Spring, but should still be high enough that the ball will clear the Rail Spring when the Whirly begins its normal rotation.



d. **Crank Down.** Shift into this mode from any other Adjust Mode by pulling the Bucket down next to the lower switch. Now wait for the previous adjust sequence to finish. The Bucket will now retreat from the front wall, reverse and return to its home position, pause and then repeat until another module is selected. If you are having problems with the Bucket coming back to the correct position under the end of the Coaster Track, this will help you check it. The position can be adjusted by adjusting the position of the switch mounted on the green arc just inside the front panel.

e. **Crank Up.** Shift into this mode from any other mode by pushing the Drop Button. Wait for the previous adjust sequence to finish. The Bucket will now rotate up to the dump position and stop. You may now adjust the Drop Rod so that it just holds a ball in the Drop Block. Push the Drop Button and the bucket will retreat about six inches and return to the dump position. Repeat as necessary until the Drop Rod stops in the proper position. *This is also the mode to use when adjusting the Trampoline.*

### **Adjusting the Trampoline.**

1. While in the Adjust Mode, use the cam on the hoop motor to move the backboard to approximately its center position. **Note:** The hoop motor has no adjust feature and will remain wherever you set it.

2. Load a ball on the Bucket and push the Drop Button. The Bucket will dump the ball into the Drop Block and remain in that position until the Drop Button is depressed again.

3. Push the Drop Button and observe to see if the ball is bouncing to the correct spot to go through the basket.

4. Range. If the ball is bouncing a little too far, open the door to the controller and reach underneath the Trampoline to loosen the wing nut you will find there. Then move the Trampoline a little closer to the front of the machine (toward you).

5. If the ball is falling short, move the Trampoline a little toward the back of the machine (away from you).

6. Drop another ball in the Drop Block and push the Drop Button to test your correction.

7. Direction. If the ball is going too far toward the left, move the Trampoline toward the right and vice versa.

8. Repeat Steps 6/7 until you have the ball bouncing to the correct location.

9. Tighten the wing nut underneath the Trampoline.

*To get out of this mode, select any other mode by moving a module as close to its switch as possible. Then hold the Drop Button depressed until Waldo begins moving the newly selected module.*

f. **“B” Dispenser** (The “B” Dispenser is the one which dispenses the actual product.)  
If you need to place the “B” Dispenser in a continuous mode:

1. Select the Adjust Mode on the Mode Selector.
2. After the machine sets up and is ready to run, insert a quarter in the Coin Mech and turn 3/4 turn.
3. Wait for the previous sequence to finish.
4. Observe that the “B” Dispenser is now in a continuous rotation without pauses. This will continue until you select another module.

g. **“A” Dispenser** (The “A” Dispenser is the one which dispenses acrylic balls into the playfield area of Oscar.)

1. While in the Adjust Mode, reach up into the optical block to interrupt the optical sensor (electric eye).
2. Wait for the previous module to finish its sequence.
3. Observe that the “A” Dispenser will now rotate continuously without stopping until another module is selected.



## *Appendix 2*

### **Suggested Tools**

We suggest you keep a kit comprised of the following tools:

Portable vacuum  
2" wide paint brush (for cleaning)  
Small flashlight  
1/4" nut driver  
5/16" nut driver  
1/4" end wrench  
5/16" end wrench  
7/16" end wrench  
8" flat file  
needle nosed pliers *or* bent needle nosed pliers  
Short Phillips screw driver  
2 mm Allen wrench  
3/32" Allen wrench

**Optional:** (Not required but a great help if a Coin Mechanism ever needs changing. Also helpful to work on troughs, or to remove the controller)

Battery operated drill driver with flexible shaft  
1/4" hex bit for drill driver  
Phillips bit for drill driver

### Appendix 3

## Replacement Parts

It is generally easiest to contact QLT Customer Service at 1-888-483-1827 for spare parts. However, if you care to try to procure parts from another source, here is help.

<u>Description</u>	<u>Use</u>	<u>Sample Brand</u>
TR5 Sub-Miniature Fuse - 250 milli amp (1/4 amp)	LED display Circuit board	Wickman 19373 series
TR5 Sub-Miniature Fuse - 2 amp	-	-
MR11 quartz halogen lamps	Light play field	GE MR11
1/4" single piece Shaft Coupler	Connect motors to shafts	Stafford 7L004
1/4" Shaft Collar	Secure Bucket Secure Elevator rods	Stafford 4L
LED 5mm Red High Diffused Yellow High Diffused Green High Diffused	LED display	Digi-Key LT1127
3/4" Diam, 7/8" long tubular cam lock	Front window Front door	LAI Group Z422G-A2171
115v, 6 rpm reversible motor	"A" Dispenser Bucket	Hurst SA 4002-008
115v, 10 rpm reversible motor	"B" Dispenser Whirly Hoop	Hurst SA 4002-010
115v, 60 rpm reversible motor	"C" Elevator "R" Elevator	Hurst SA 4002-015
Lever actuated Cherry switch	Hoop switch	Cherry D44L-R1ML
Roller actuated Cherry switch	"B" Dispenser	Cherry D43C-R1RA
Braided Nylon String	Elevators	Any good quality braided nylon string such those used by contractors in laying out a foundation.







DATE PURCHASED: \_\_\_\_\_  
PURCHASED FROM: \_\_\_\_\_  
SERIAL NUMBER: \_\_\_\_\_  
MODEL NUMBER: \_\_\_\_\_

**QLT  
Warranty**

The above identified piece of equipment has been manufactured by QLT Merchandising Corp. (QLT), 160 SW 12th Ave., Suite 106, Deerfield Beach, Florida, USA. QLT warrants to the original purchaser, such equipment against defects in workmanship for a period of one year from the date of purchase. QLT, at its option, shall repair, replace, or substitute defective part(s) at no cost during this period subject to the limitations on insurance and shipment costs stated below. If a part becomes obsolete at the time of repair, and/or cannot be reasonably substituted for, QLT will credit, at half the current list or last recorded price, only that part toward a new machine or any product QLT offers. This credit offer shall be the sole responsibility of QLT Merchandising Corp. in the event of an obsolete part.

This warranty does not cover damage caused by normal wear and tear on cabinet finish, coin mechanism, coaster track, rotating mechanisms, customer abuse, or damages due to accident, misuse or alterations made by any person without the prior express written authorization by QLT. This warranty is the sole and exclusive warranty of QLT and no person, agent, distributor, or dealer of QLT is authorized to change, amend or modify the terms set forth herein, in whole or in part.

In the case of a problem with the equipment identified herein, QLT Merchandising Corp. should be contacted during regular business hours to discuss the problem and verify an existing warranty. QLT personnel will assist the customer to correct any problems that can be corrected through operation or maintenance instruction, simple mechanical adjustments, or replacement of parts. In the event the problem cannot be corrected by phone, and upon issuance of a return authorization by QLT, the equipment is to be returned to QLT by the original purchaser at the purchaser's expense. QLT customer service personnel may be contacted for complete return authorization information.

THIS EXPRESS WARRANTY IS GIVEN IN LIEU OF ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND CONSTITUTES THE ONLY WARRANTY MADE BY QLT MERCHANDISING CORP.

In no event shall QLT's liability for breach of warranty extend beyond the obligation to repair or replace the non-conforming goods. QLT shall not be liable for any other damages, either incidental or consequential, or the action as brought in contract, negligence or otherwise. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.



